



The Magazine for Info

**PLUS ONE CIO'S STRUGGLE
TO SAVE A FLOUNDERING HMO**

A true-life tale of blood, sweat and
systems integration **PAGE 108**

IT vs. Marketing

How to End the War
And Profit from a New Relationship

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Douglas Pileri,
Thomson Multimedia's
IT guy, learned to
speak marketing.

Ken Greer, Thomson
Multimedia's marketing guy,
tore down the walls
between his group and IT.

Leading in Hard Times

How to staff, lay off, cut costs,
retain customers and prepare for
the turnaround (yes, it's coming) **PAGE 118**

CIO CONFIDENTIAL: Why the Slowdown Could Be
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less time to
do more?**

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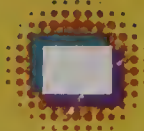
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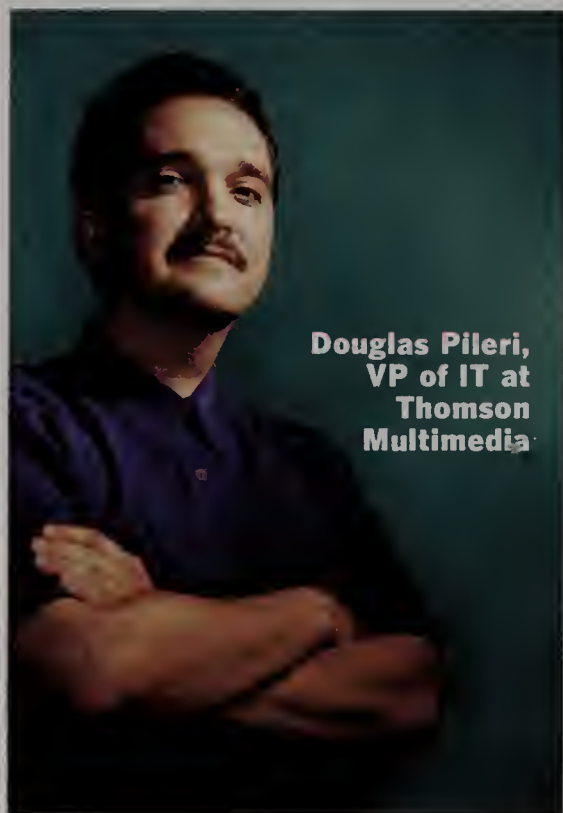
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Douglas Pileri,
VP of IT at
Thomson
Multimedia

COVER STORY PAGE 98

IT Versus Marketing

Understanding how to heal the rift between IT and marketing—as did Thomson Multimedia's IT VP (left) and e-business marketing manager—is an essential job requirement for any successful CIO. Here's how to end the war and profit from a new and improved relationship. *By Lee Pender*



Ken Greer,
e-business
marketing
manager at
Thomson
Multimedia

COVER PHOTO BY JEFF SCIORTINO

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TURNAROUNDS When Harvard Pilgrim Health Care's new CIO came on board, the HMO was fading fast. It's out of ICU now, but it's going to be a long time to full recovery. *By Angela Gemusa*

Leadership: Hard Times, Good Times

Welcome to Hard Times Lay people off or retrain them? Focus on processes or customers? Outsource or keep in-house? We'll give you some of the best practices around. *By Simone Kaplan*

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Let's Not Forget the Good Times

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PROCESS REENGINEERING The venerable motorcycle company gets a new lease on life, and it's betting on ERP to keep it rolling. *By Stewart Deck*

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"Linux is so totally dreamy!"

WHY *LINUX* HAS MORE FANATICAL DEVOTEES THAN A TEEN POP IDOL.

FIRST THE BRITISH INVASION. Now Linus Torvalds. One used mop tops and catchy beats to create a worldwide frenzy. The other used the arguably less sexy but equally effective concept of open standards. When Torvalds created the new Linux operating system, he took the "what's mine is mine and what's yours is yours" world of proprietary software and turned it upside down. The result? A true software meritocracy where anyone can share, refine and customize code that's open and available for all.

What does this mean for business people? It means that new e-business infrastructures can be rapidly adapted to particular business tasks. Companies will no longer be forced to adjust their processes to the only software available. Since Linux® is now the fastest-growing and most accessible operating system, it's where the best technologies will be created and arrive first, and where the greatest number of skilled staff and technicians will appear now and in the future. Linux is hardware-agnostic, so it can quickly begin to remove the massively cost-intensive task of integration across disparate platforms. These aren't just software advantages; they are real bottom-line

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Proof? Linux specialists at IBM Global Services recently helped Telia (Scandinavia's largest telecom and Internet service provider) consolidate a complex infrastructure of multiple UNIX® servers into one mission-critical, Linux-optimized IBM @server. One server capable of hosting more than 1,500 virtual Internet Linux servers simultaneously.

It's exciting stuff. And this is just the beginning. So if you think you can keep your composure, visit ibm.com/e-business for more information.



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United Way of Massachusetts Bay VP of Technology Services **Scott Smith** achieves his nonprofit mission with first-rate technology.



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MARKET FACT

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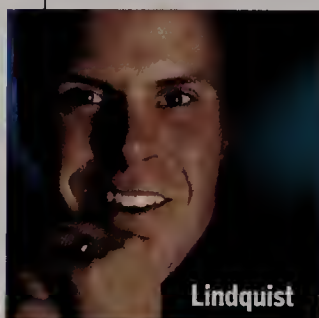
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Technology Editor Christopher Lindquist on what's coming and what it's good for. www.cio.com/online/techtact



Lindquist

TUESDAY Quick Poll Report

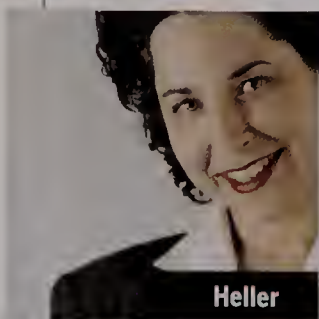
Hundreds of CIOs can't be wrong. Or could they? What information executives think about current issues and why. www.cio.com/poll

WEDNESDAY Metrics

Industry numbers that matter from the country's most reputable analysts. www.cio.com/metrics

THURSDAY Sound Off

For opinion on managerial, political and ethical dilemmas that confront CIOs daily, read Senior Web Editor Martha Heller's column and join the debate. comment.cio.com



Heller

FRIDAY The 35 Cent Consultant

Executive Editor Derek Slater responds to readers' inquiries about everything from ERP to extranets. www.cio.com/35cent

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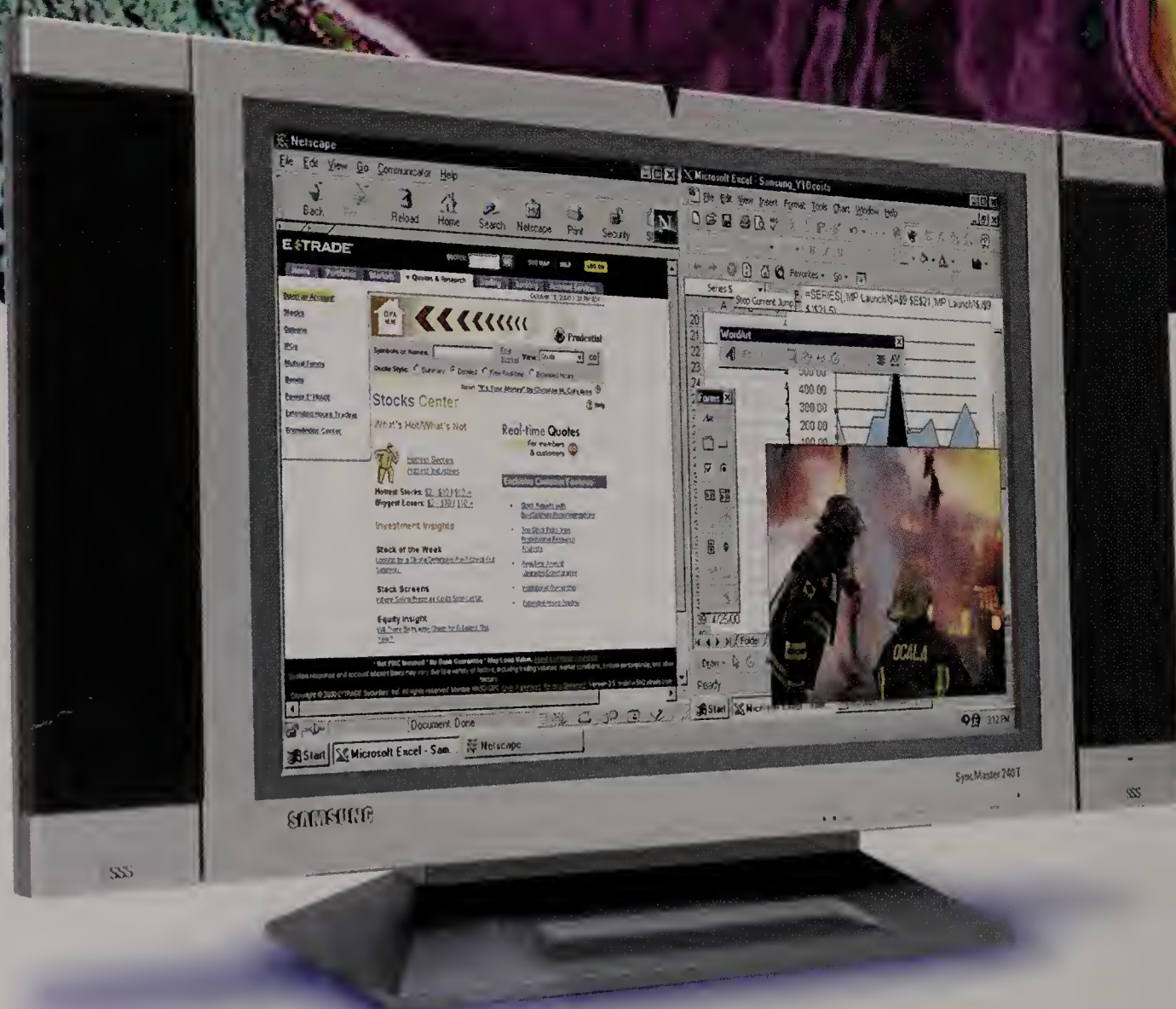
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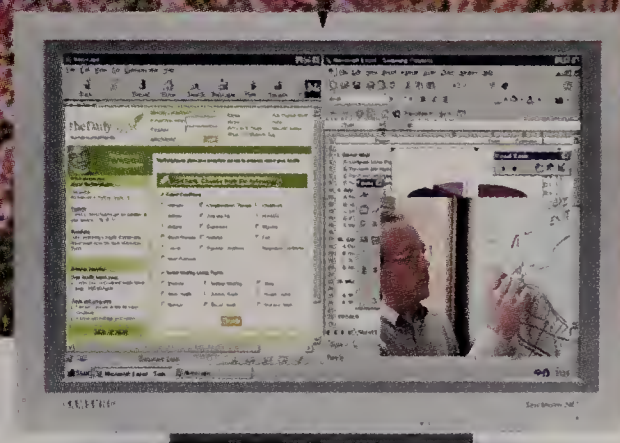
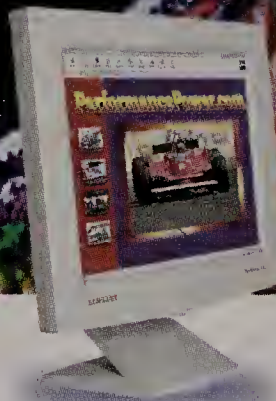
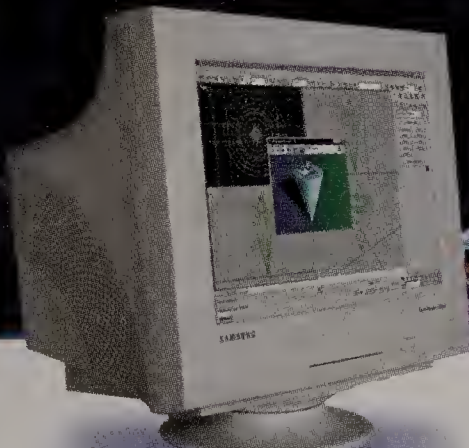
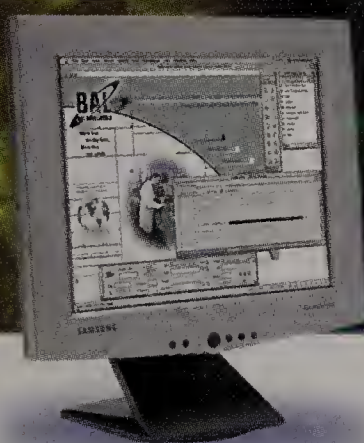
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From the Editor

lundberg@cio.com

Will the Real Leaders Please Stand Up?

Last month, our CIO Confidential columnist took on the topic of layoffs done in the name of short-term earnings at the expense of long-term business capabilities and employee morale. He pointed out that in most cases where corporations are slashing jobs, senior management is often not held accountable and rarely shares in the pain of cutbacks. At the writer's former company, where the second round of layoffs is in progress, senior execs are still enjoying a number of high-priced perks, including a fleet of executive jets. Not only is this wrong-headed and unjust, it's a recipe for disaster when things pick up again.

We've received a flood of e-mails in response to the column ("Cogs in the Machine," May 1, 2001), and we'll run some of them on our letters page next month. One reader addressed the effect of cascading disaffection. "[Laid-off employees] will find positions [elsewhere] while actively recruiting their former coworkers....The casualty count will increase until frantic hiring ensues, trying to keep the maintenance of the users and other customers up to a bare minimum....Too bad the 'leaders' of these companies have futuristic and historical short sight."

In light of such shortsightedness, it's all the more impressive when a story like Acxiom's comes along.

In case you missed it, in April, Little Rock, Ark.-based Acxiom (which provides data integration and database man-



agement products and services) announced it needed to make cutbacks of around \$70 million. But rather than lay anyone off, it did a 5 percent across-the-board pay cut—in exchange for company stock of equal value. A week later, in a huge vote of confidence, 36 percent of employees (1,973 people) took an additional voluntary cut for a 2-to-1 match in stock. As a result, the company expects to save some \$30 million while actually strengthening morale and employee commitment to the company—despite the leaner times.

Acxiom's approach anticipates that when things turn around, as they inevitably will, companies that have an experienced, motivated and coherent workforce will have an advantage.

How refreshing.

Sometimes layoffs are unavoidable. But it's heartening to see a company try other ways to cut back first. Kudos to Company Leader Charles Morgan (yup, that's his title) and the rest of Acxiom's executive staff and board of directors.

For more on managing in a down economy, please read "Welcome to Hard Times," by Staff Writer Simone Kaplan, beginning on Page 118.

Has your company come up with smart ways to cut back without laying people off? Let me know, and if it's something other readers could use, I'll include it in a future issue.

Alki Lundberg

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Reader Feedback

A FALSE SENSE OF SECURITY

I have discussed security issues with many Fortune 100 CIOs as well as those from startups and small companies. What I have found agrees with some of the areas CIO has reported on. Many CIOs say that security is so complex they really don't have time to sort it out. Why do I need another organization to watch security? Isn't my system administrator the most knowledgeable? I have a firewall—I'm safe, right? I haven't been hit yet—guess I'm safe, right? We have done an excellent job with firewalls and intrusion detection—that's all I need, right?

All too often they fail to recognize that security is not a firewall. Network security has three layers. The outer layer is the gateway. It answers the question, Can I come in?

Next is the control layer. It answers the question, Where can I go? Last is the data layer. It answers the question, What can I do? The problem is that without a senior-level manager to advise, explain and address these layers, we lose.

Think about it. Do you believe for a moment that America Online, Egghead, Microsoft and so on didn't have firewalls and IDs on their networks? Then how was data actually stolen? It was stolen because these companies did not protect the control and data layers. They essentially didn't know who had access to what, nor did they know what they were supposed to have access to. Once you break through that hard candy shell (the gateway layer) the world is open. That's how they lost.

It's funny that we all know the majority of our losses are because of insiders, but we do little to protect against their threat. We have traditionally spent 80 percent of our budgets protecting against 20 percent of the threat. Not wise.

David M. Hager

Vice President

OppenheimerFunds

Englewood, Colo.

mhager@oppenheimerfunds.com

A B2B BOOM

I read "Strategic Sourcing Lives" [Dav-
enport on...] in the March 1, 2001,
issue with interest. You have good
viewpoints. But I believe the online
B2B exchanges will see an explosive
growth and a dramatic rebirth. My
views are based on the following
facts. B2B transactions are essential
to business today, and many reputed
sources have also supported this.

According to Forrester Research, online B2B will capture more than 50 percent of online business trade in the United States during the next five years. It was also found that 71 percent of companies would extend their business processes to e-marketplaces by the end of this year. Venture capitalists like Benchmark, Capital, CMGI, Internet Capital Group and many others are now making multibillion-dollar investments in B2B Internet ventures. Recent industry reports by some of the major investment banks, such as Bear Stearns, Goldman Sachs and Morgan Stanley Dean Witter also indicate a growing supply of financial capital chasing the new B2B entrepreneurs.

Mainly, integration is a huge issue in e-markets. However, Web Methods has

eased the way somewhat with integration tools. But it will still be many years for other companies to follow suit.

It has been proven that XML language and database specification will play an integral role in B2B functions in fields such as catalogs, auctions and exchanges. Hence, this popular and easy-to-use XML will replace the older more complicated EDI approach. Mary Meeker of Morgan Stanley supports this view and goes on to report that the complicated format and high costs of EDI have resulted in less than

Davenport on...

Strategic Sourcing Lives!

Where's the gold in them thar e-markets?

BY TOM DAVENPORT

[illegible][illegible]

Our data, based on a sample of 120 e-markets, suggests that

150,000 businesses implementing it. But then, more than 120 million businesses are connected to the Internet through XML, and the cost of implementation and access are generally quite affordable.

Implementing information and process standards is difficult: Not many companies want to establish this, since they will be forced to compete on the basis of price alone.

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Companies that join e-marketplaces gain a number of benefits. E-marketplaces offer advantages to all players by reducing acquisition cycles, expanding markets and lowering costs. They provide an open exchange of information between buyers and

Tom Davenport responds:
It's interesting to hear that there are some people who believe in the rapid rebirth of B2B marketplaces, but I am even more convinced by recent events that any success will be over the long haul. The New York Times recently

Many exchanges are finding it difficult to agree on common information standards.

sellers, and both benefit from vendor and customer evaluations. Buyers take advantage of reduced purchasing risks. E-marketplaces provide incredible opportunities to reach new customers and suppliers for companies that participate.

Gartner announced in its March 13, 2001, forecast that in 2000, the value of worldwide B2B Internet commerce sales surpassed \$433 billion, a 189 percent increase from 1999. It also went on to predict that worldwide B2B Internet commerce would reach \$919 billion in 2001 and \$1.9 trillion in 2002. In 2003, the market will increase to \$3.6 trillion, and at the end of 2004, worldwide B2B Internet sales should reach \$6 trillion. Gartner projects that the market will total \$8.5 trillion by 2005.

The economic downturn currently acting on the U.S. market will only act as a drag on the B2B market, which will allow lagging B2B companies to catch up with the rest. Sound business principles and realistic expectations will enable e-marketplaces to grow more rationally in time and eventually prove to be more advantageous than outsourcing.

Seenig Govindan
Consultant
Integrated Information Systems
Tempe, Ariz.
seenig@iisweb.com

reported that many exchanges are finding it difficult to agree on common information standards. Forbes just quoted one of the co-CEOs of Covisint, the automobile manufacturer marketplace, as saying, "The world completely underestimated how difficult it is to do an exchange."

Frankly, I'm proud not to have been one of the underestimators.

A SCHOOL CANNOT LIVE ON I.T. ALONE

I am one of the jewelry teachers at Westinghouse, writing in response to the article "A School Grows in Brooklyn" [April 1, 2001]. I respect Mr. Brizard [principal of George Westinghouse High School] and have always tried to show him my support both as a professional and a friend. However, his statements in the article leave much to be desired and need some clarification.

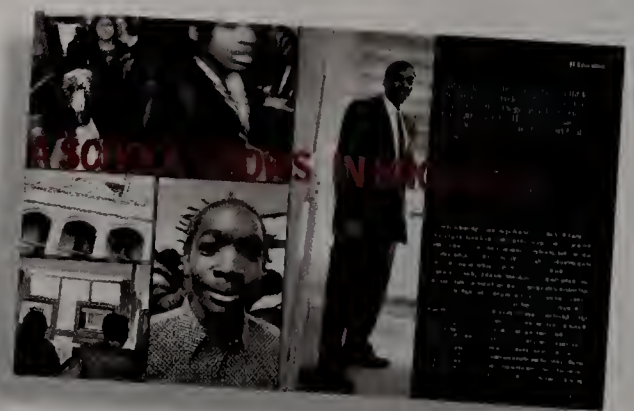
I have been teaching at Westinghouse for almost 20 years, and I have never made a menorah, nor have I ever seen one being made. (I did fix a sterling silver candlestick for a

now-retired principal once on my own time.)

Yes, we do make nameplates as a project (with 10th-graders), but it is a conclusion to lettering and layout design, piercing, soldering and polishing lessons. We also teach metal fabrication, alloying, jewelry design, wax-model making, lost-wax casting, rubber-mold making, electroplating, hand, machine and computerized engraving, gemology, lapidary, hard enameling, as well as stone setting.

New York City has a long tradition of being the heart of the jewelry industry, and in the occupational handbook given to guidance counselors in schools there are 3,000 jobs projected to open in the industry during the next 10 years (and Westinghouse was the only school in New York City teaching a comprehensive program).

I do admit that many of our youngsters do not go into the trade after graduation (most go on to college). I wonder how many students making a choice to go into any occupation at the age of 14 or 15 really know what they want to be when they grow up. But the students who do go into the jewelry



industry have generally been quite successful, opening their own businesses, running factories, and working in sales and other related fields.

The notion that everyone will be working in high-tech fields is not practical. Some of our youngsters will find their way using their hands and their artistic abilities. To make light of those skills is doing all of us an injustice.

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As a footnote, although it's not a rule, in most Sunday editions of *The New York Times*, there are jobs for jewelers, diamond setters, model makers, special-order jewelers, jewelry salespeople, mold cutters and so on—I guess you just have to know where to look.

Arthur L. Kutcher

Teacher

George Westinghouse High School

akutcher@earthlink.net

The notion that everyone will be working in high-tech fields is not practical.

CORRECTIONS

In "Clicklayer," Feb. 1, 2001, we incorrectly reported Office Depot's website numbers. The company has 11 sites in eight countries including the United States. It has operations in 18 countries.

An article in the April 1, 2001, *CIO* ("Trading Up") profiled the Chicago Board of Trade Clearing Corp. (BOTCC), its IT modernization work and its efforts to start a business supporting B2B exchanges. The article quoted George Hender, the management vice chairman of The Options Clearing Corp. While the article correctly reflected Hender's comments praising the BOTCC's technology, it shouldn't have attributed to Hender conclusions about the relative standing of BOTCC's and the Options Clearing Corp.'s own technology efforts, or about any impact that the BOTCC's technology might have had on a merger between the two organizations.

We regret the errors.

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services was spun off from GTE last year, and today we're a billion-dollar company known as Genuity.

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A BRIEF HISTORY



In 1969, BBN was hired by the U.S. government to develop the ARPAnet, the forerunner of the Internet.



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In 1997, BBN was acquired by GTE, the company that created our high-speed, 17,500-mile, Tier 1, fiber-optic network.

GENUITY

In 2000, GTE Internetworking became an independent company, renaming itself Genuity. Today, we offer a vast array of managed Internet services, including *Black Rocket*.™

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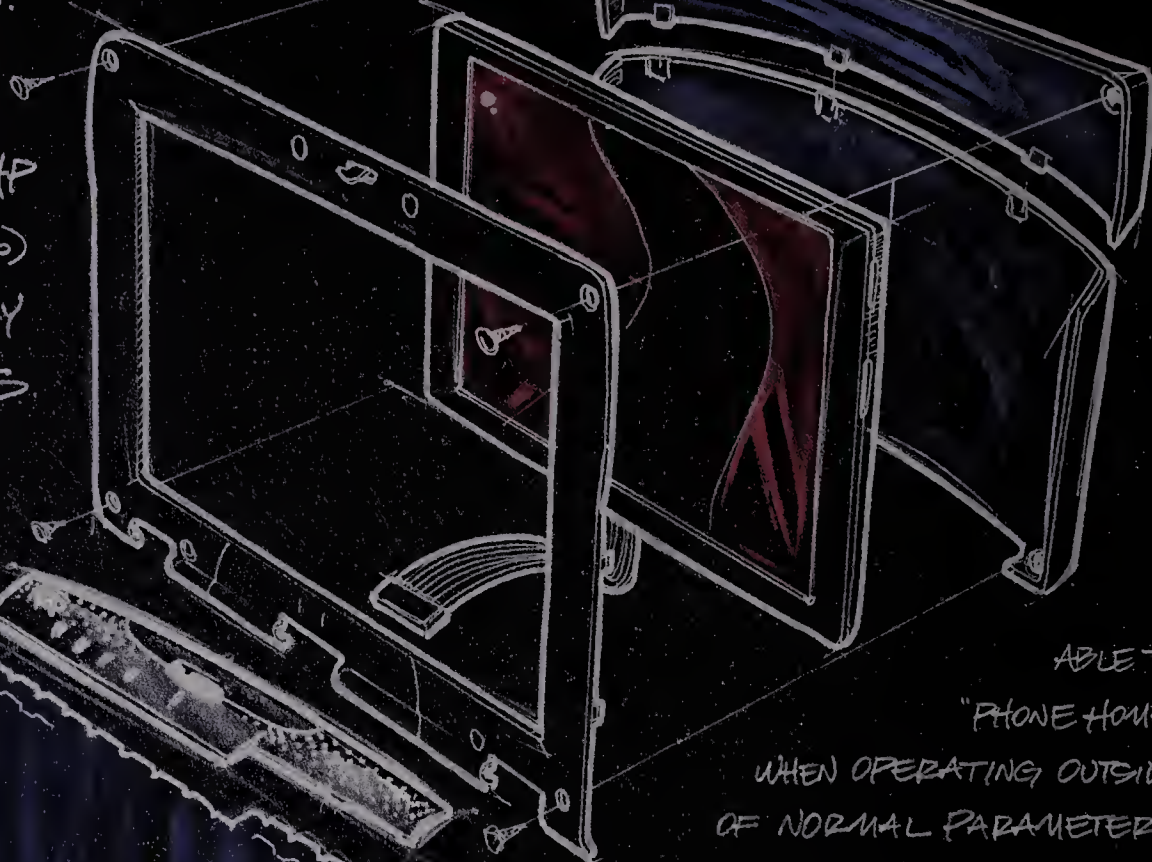
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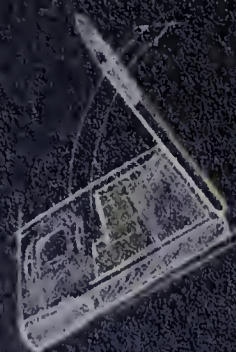
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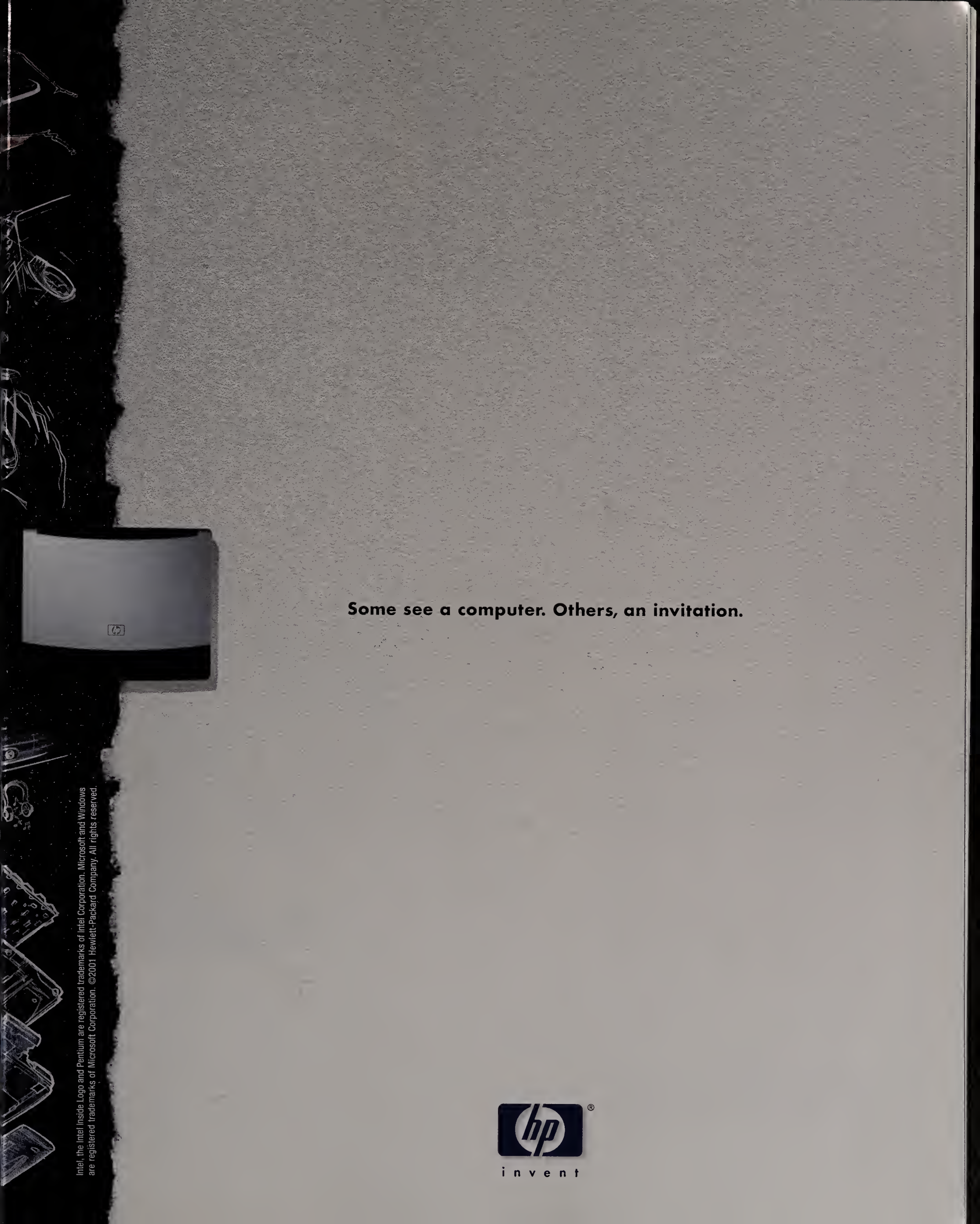
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trendlines

the **NEW** the **HOT** the **UNEXPECTED**

Edited by Sandy Kendall

SUBMERGING TECHNOLOGY

Swimming Without Sharks

By Meg Mitchell Moore

WITH THEIR RAZOR-SHARP teeth and those wide, eerie smiles, sharks are easily the most feared creatures of the ocean. But for scuba divers, sharks aren't just characters in a Steven Spielberg film—they're a real hazard on the job.

Department of **BIG,** Scary Numbers

995 MILLION: the units of Bluetooth-enabled equipment shipments projected for 2005

\$2.8 BILLION: estimated enterprise spending on streaming video technology in 2005

\$80 BILLION: Estimated spending by U.S. businesses in 2000 on technology products, services and personnel specifically for Internet activities; expected to reach nearly **\$200**

BILLION by 2004 **\$8.5 TRILLION:** Expected total of worldwide B2B Internet commerce market in 2005 Sources: Cahners In-Stat Group, Jupiter Media Metrix, Gartner

Several years ago, the Natal Sharks Board, a South Africa-based organization formed to protect beach users in an attack-prone resort area of the country, decided to do something about it. So it developed the technology for the SharkPOD Diver Unit. The device consists of three parts: a main body that attaches to the diver's air cylinder and two electrodes that attach to one fin and over the shoulder. The electrodes create an electronic field around the diver that repels sharks. The whole thing looks a bit like a transistor radio on steroids.

SharkPOD earned its 15 minutes of fame during the 2000 Olympic Games in Sydney, Australia, when divers used the device to protect swimmers during the triathlon. But it's cumbersome and expensive, weighing in at 5 kilograms and costing approximately \$399. Now a company in southern Australia called Sea-Change Technology is making the devices smaller (500 grams) and cheaper (\$240). The point here is that the garden-variety

swimmer (albeit one with money to spend) will be able to protect herself in dangerous waters. The product is in the final design stage. The Florida Museum of Natural History points out that beachgoers are more likely to be injured and killed on land while driving to the beach than by sharks in the water. Still, better safe than eaten alive.

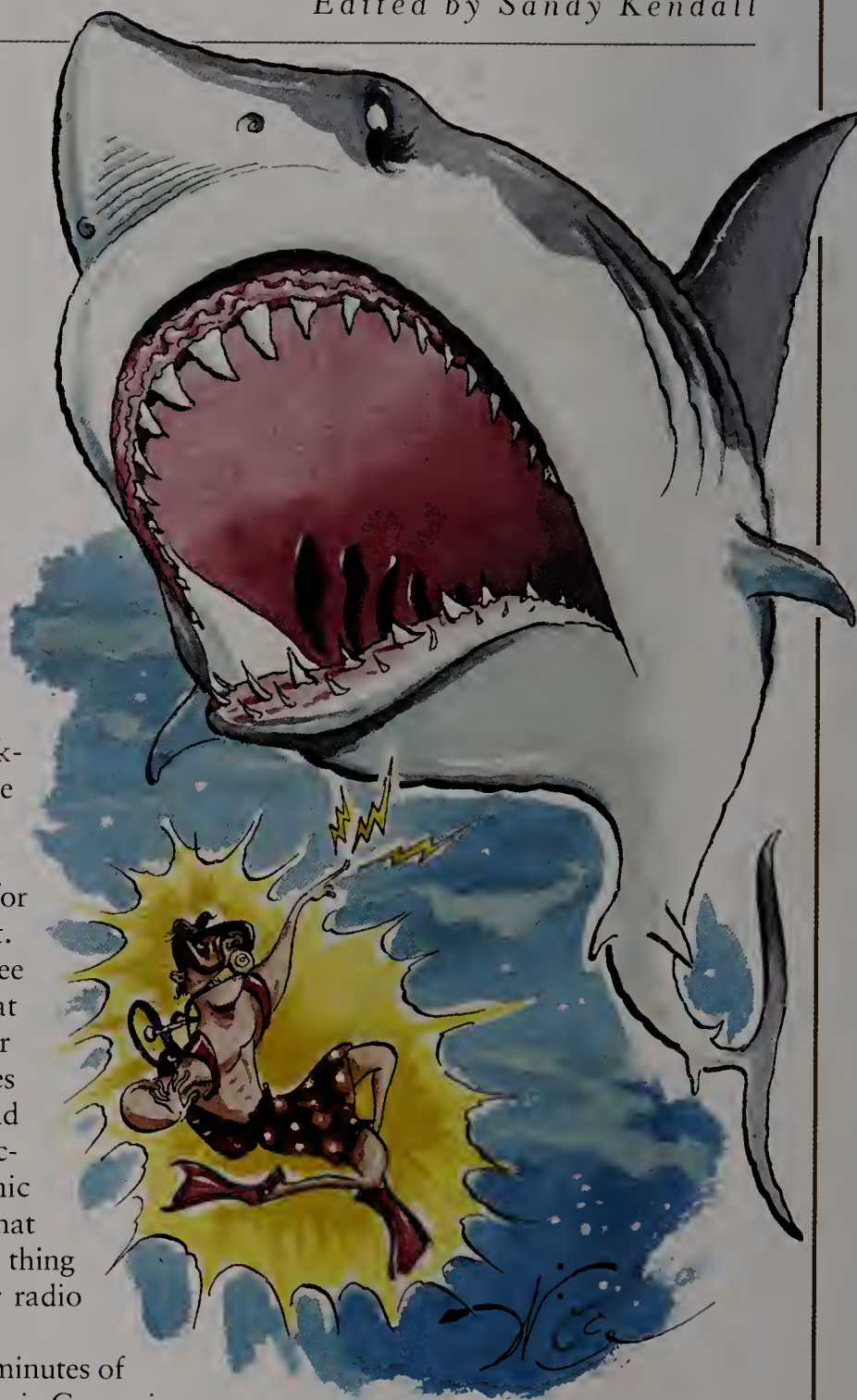


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CAREER

On the Rebound

VETERANS BACK FROM the dotcom wars may be turning up at your doors soon. For example, former dotcomers now account for 20 percent of unsolicited résumés sent to John J. Davis & Associates, a New York City-based company specializing in senior-level IT management recruiting.

The influx of dotcom talent comes at a good time, says company President John Davis. "We see a wide range of companies developing e-business strategies, and it's their IT organizations that are playing the central role. E-business has now become an imperative, and it's being integrated with all technology constituencies." A recent survey by

another recruiter, RHI Consulting, confirms the sense that CIOs are increasingly moving from developing systems to developing strategies. The survey of more than 1,400 CIOs from a random sample of U.S. companies with 100 or more employees, asked respondents to describe the aspect of their job that had changed the most in the past five years. The top three areas were increased interaction with other departments (28 percent), more involve-

ment in strategic planning (27 percent) and a greater role in the organization's bottom-line results (25 percent). Demand for senior IT talent is still strong, therefore, and e-business experience—even at a failed dotcom—makes for promising candidates.

"Whatever might be said about dotcom refugees in general, the IT people are tops," Davis says. "The dotcoms didn't implode due to inadequate technology but unrealistic business plans."



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Washington Watch

Edited by Elana Varon

Enabled Web

AN OBSCURE regulation requiring federal agencies to make their websites accessible to people with physical disabilities by June 21 offers private sector CIOs a road map for how to make their companies' sites accessible to disabled employees and customers.

The regulation, which carries out a law known as Section 508, requires hardware, software and websites in most government agencies (some military functions excepted) to be accessible by the disabled. Standards accompanying this rule spell out what that means—for instance, installing automated screen readers to describe graphics or providing closed-captioning of online employee training videos. So-called accessible technologies have existed for years but haven't been easy to integrate with mainstream applications. Now software vendors who count the feds among their customers have responded to statute-driven demand and upgraded common systems, applications and tools to work more easily with accessible products.

Private sector CIOs can use the Section 508 tech standards to guide their own deployment of these newly upgraded products and can look to the feds to work out the bugs.

Mike Mason, an attorney in the technology law and government contracts practice groups at Hogan & Hartson in Washington, D.C., says that once accessible technologies come to market, private companies could be held liable under the Americans with Disabilities Act for not using them. There have already been rumblings on

this front. Last July, America Online settled a lawsuit brought by the National Federation of the Blind by agreeing to make its websites accessible for vision-impaired customers. Mason says that if judges must decide whether Web stores should be as accessible as brick-and-mortar ones, they'll look at how the feds have applied the Section 508 standards for guidance.

You can download the Section 508 technical standards at www.access-board.gov.

—Joe Kendall

Stay-Home Pay

WOULD YOUR company have more telecommuters if it got a \$500 tax break for every worker with a home

office? **Rep. Frank Wolf (R-Va.)** and **Sen. Rick Santorum (R-Pa.)** think so. They've proposed a bill offering such a break to companies with employees who telecommute at least 75 days a year. The break would go to either the employee or employer, whoever pays for the home office equipment.

It's widely believed that telecommuting is beneficial to the environment, helps retain workers and allows employees to balance work and family life. When AT&T studied its own at-home workers in March, it found that they spewed less carbon dioxide into the atmosphere, and 77 percent of them reported higher

productivity. Yet nationwide, only 10 percent of adult workers telecommute, according to the International Telework Association & Council.

Many managers still believe at-home workers are shirkers. **John Girard**, vice president and research director at Gartner, says educating managers on

telecommuting will have a greater effect than a tax write-off. "Alone, this is not enough incentive for businesses to encourage or support telecommuting," he says.

But, says **Rob Traynham**, a spokesman for Santorum, the tax proposal is a step forward: "You have to raise awareness and then give them the incentive" to take action. —J. Kendall



Frank Wolf

"E-government currently is a loose-knit mix of ideas. We are in essence taking the often confusing, overlapping and inefficient maze of government programs as they now exist and simply transferring them on to the Internet."

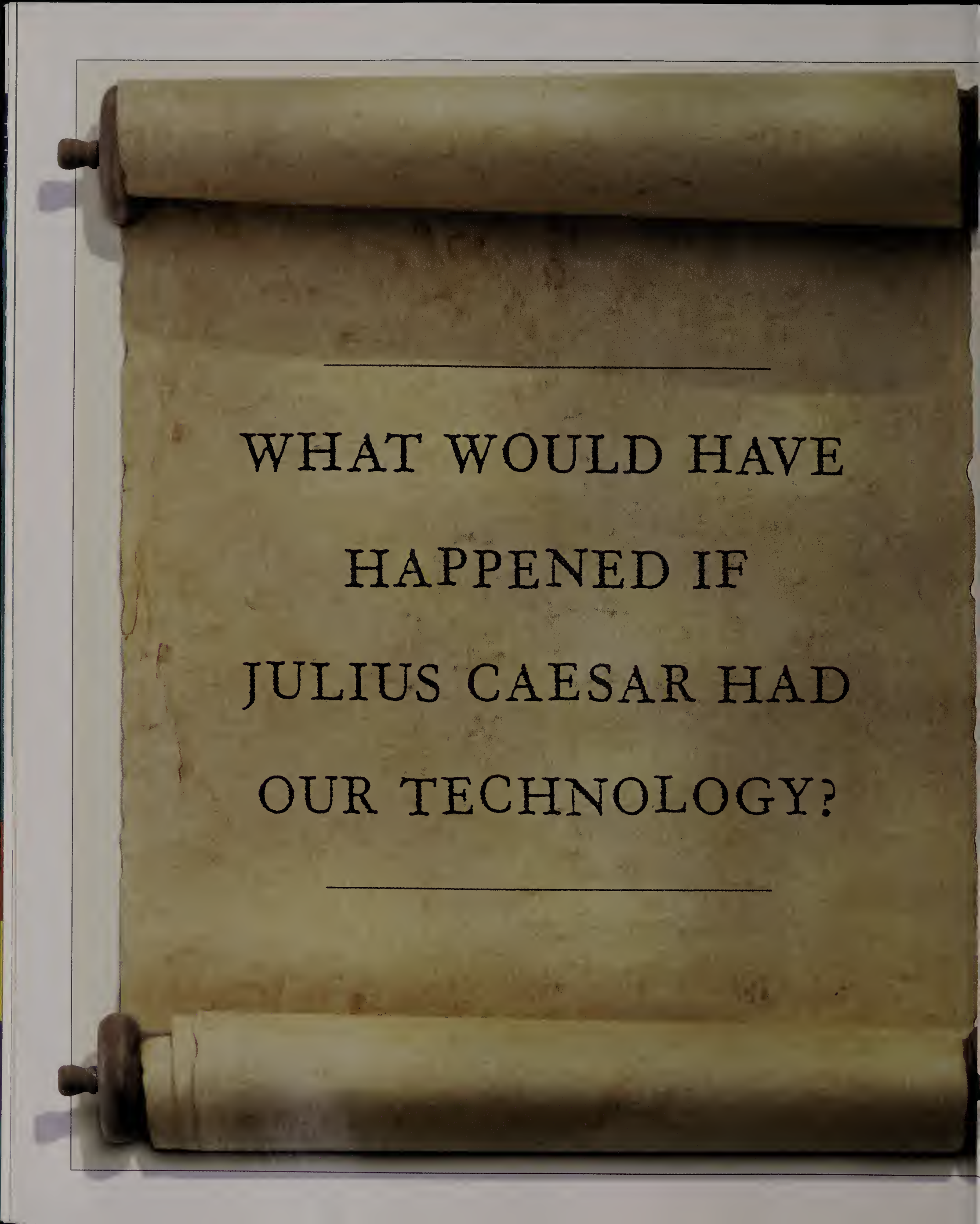
—Sen. Joseph Lieberman (D-Conn.)

A lighthouse stands on a rocky island in a foggy sea. The lighthouse is dark with a glowing yellow light at the top. The sea is dark and choppy, and the sky is a pale, hazy blue. The overall mood is somber and mysterious.

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A scroll with text on a parchment-like background. The scroll is unrolled, showing a central section with text. The text is in a serif font, all caps. There are horizontal lines above and below the text. The scroll is held by wooden pegs on the left side.

WHAT WOULD HAVE
HAPPENED IF
JULIUS CAESAR HAD
OUR TECHNOLOGY?

ROMAN EMPIRE SELECTS
NOVIENT TECHNOLOGY

Julius Caesar was like most modern day CEOs in charge of global organizations. He was on a mission to accelerate growth and more effectively manage his global empire. Of course, as we all know, Caesar's empire eventually became, well, history.

But if Caesar had used

Novient technology, would his empire still be around today?

(Please don't ask us to explain how he got it. Just go with us here.)

So Caesar signs on with Novient. Now Caesar's generals, who are fighting battles all over the world, suddenly start collaborating together in real time. They're recognizing new opportunities to exploit. When their supply

CAESAR AND GENERALS
COLLABORATE IN REAL TIME

lines are cut off, they know immediately and respond before it costs them crucial battles. Very soon, Caesar's generals have blown right past the Gauls and conquered every known area of the world.

So now Caesar has all these new people and he's got more assets. Of course, adding a lot of bodies can cause more problems than solutions. But with Novient, Caesar is improving productivity and optimizing

CONNECTING ARMIES
AND GOVERNMENTS SPREAD
AROUND THE WORLD

the performance of all his people. Novient technology enables the Roman Empire to grow rapidly and collaborate

with all of the newly conquered lands. Suddenly, building more coliseums isn't a problem. They are popping up everywhere and season ticket sales are at an all-time high.

ROMAN EMPIRE OPERATES
AT OPTIMUM EFFICIENCY

But best of all, Novient's ability to identify "best-fit" personnel has enabled Caesar to put every one of his people in the right job. They are productive and excelling like never before. Simply put, they're happy. So, instead of getting a knife in the back, Caesar is suddenly getting a big pat on the back.

no toga
no sandals
no service



As you can see, if Julius Caesar had been able to use Novient's technology, the Roman Empire might still be dominating the

entire world today. And, of course, you would be reading this ad in Latin.

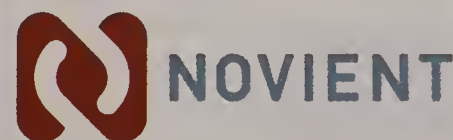
Novient technology can add value to any service organization worldwide. Our Internet-based software allows service

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LIVES INTO THE 21ST CENTURY

organizations to gain visibility into future projects, optimally match people and skills



to project requirements, and automate the service delivery process. To find out about how Novient can build your empire, please visit us on the Web at www.novient.com or just call us at 1-866-494-7349.



intelligence³

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FOR CAESAR

Elect
Al Gore
Caesar

NEW VENTURES

Self-Serve Law

By Eric Berkman

AS IF THE 1995 O.J. Simpson trial wasn't a wild enough ride, former Dream Team member Robert Shapiro has taken the dotcom plunge.

Shapiro recently cofounded LegalZoom.com, an online resource to help people draft simple legal documents when they don't want to pay an attorney. LegalZoom can help anyone draft a living will, get a simple divorce or even put together uncomplicated estate-planning documents. More sophisticated customers may soon be able to use the site to assemble simple partnership agreements, draft leases or form small corporations.

The site will make money by charging a fee, ranging from \$29 for living wills to about \$300

for more complicated commercial documents, but

Shapiro points out that this is a lot less than people would be paying lawyers to do the same thing. He stresses that LegalZoom does not furnish legal advice and is not meant to replace lawyers or law firms.

"We are not encouraging people not to use lawyers, and we're not in any way suggesting we're a substitute," he says. "But for those people who feel comfortable preparing their own documents, we'll act as a document preparations service."

LegalZoom's fellows in online legal services provision include Legaldocs.com, where you can construct legal documents, and LawSmart.com, where you can download forms and templates (though LegalZoom seems to be more comprehensive). Other online services will find you a lawyer or settle small claims online.

Shapiro is not intimidated by the economic downturn and its resulting dotcom carnage. "The Internet is here to stay," he says. "The fact that dotcommerce may have had some terrible problems—especially with certain kinds of business enterprises—doesn't concern us, because the basis for our business is being able to serve our customers without costly overhead.... We've exceeded expectations since we started and more than doubled our customer base every month."



HOT TOPIC



APPLICATION SERVICE PROVIDERS

Analyze This

By Steven Gnagni

ANALYZING CUSTOMER data to increase revenues is nothing new. Online companies such as Amazon.com analyze customers' past purchases in order to decide what merchandise to try to sell

them in the future. And brick-and-mortar retailers have long identified sales relationships among products and positioned them near each other to sell more of both.

But many organizations have stayed away from data analysis because it can be very costly. However, application service providers that offer to handle everything from data collection and storage to data analysis are popping up all over, says Michele Rosenshein, a former e-commerce analyst at New York City-based Jupiter Media Metrix. You'll find Primary Knowledge based in New York City, Coremetrics and WhiteCross Systems in San Francisco, and WebTrends (recently merged with NetIQ) in Portland, Ore.

Coremetrics and WebTrends both provide JavaScript tags that clients place in a webpage's HTML code. Each data tag has predefined variables, including unique visitor identification, site referral, product or content browsing, shopping cart actions and order processing. The tags relay data directly to the ASP's servers, where analytic software generates standard reports for the client. Primary Knowledge, on the other hand, has clients store data locally and periodically send that data to Primary Knowledge's servers, where software then analyzes it. All three companies also have statisticians on staff who can produce customized reports on demand. Other companies, such as WhiteCross Systems, specialize in more complex operations, including neural networking.

Rosenshein predicts that during the next one to two years 65 percent of websites will move to outsourced data analysis.

Still, she warns that these services may not be for everyone, especially sites generating 500,000 or more transactions per day or multichannel retailers with significant internal data warehousing investments. Other companies will find that complex analyses require constant adjustments to mathematical models and that it doesn't pay to outsource the operation.

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CONTINUOUS ACCESS TO ONLINE INFORMATION



COMPUTING

Happy Father's Day

FOR THAT MOTHER-OF-ALL HONORIFICS—father of the Internet—most sources name (all jokes about Al Gore aside) Vinton Cerf, now senior vice president for Internet architecture and technology for WorldCom, though a minority holds out for the late Jonathan Postel, who was director of The Internet Assigned Numbers Authority.

Besides the Internet, the computer and IT world has many other

remarkable progeny, of course. Necessity may have been the mother of all these inventions, but who were the fathers? We've listed some of the most significant of these offspring and the men generally recognized as their progenitors. There are, as in the biological world, some cases of disputed paternity, and—in an odd twist to this metaphor—some cases of undisputed, multiple fathers.



FATHER OF THE PDA
Jeff Hawkins

produced the first hand-held while at Grid in the late 1980s. Now chief product officer at Handspring and founder of Palm Computing.



FATHER OF ETHERNET
Bob Metcalfe,

while at Xerox PARC. He's founder of 3Com, former publisher of CIO sister publication InfoWorld, rare livestock breeder and now partner at Waltham, Mass.-based Polaris Ventures.

FATHER OF THE BROWSER

Marc Andreesson developed the Mosaic Web browser in 1993 while at the National Center for Supercomputing Applications. Now chairman and cofounder of Loudcloud, former chief technology officer of America Online, founder of Netscape.

FATHER OF THE MICROCHIP

Jack Kilby, with Robert Noyce, developed the integrated circuit at Texas Instruments in 1958. Retired, Nobel Prize winner for physics in 2000 for the integrated circuit.

FATHERS OF THE MICROCOMPUTER, OR PERSONAL COMPUTER

Alan Kay developed now-familiar graphical interfaces and a precursor to the laptop while at Xerox PARC in the 1970s. Vice president and Disney fellow, Walt Disney Imagineering Research and Development.

André Thi Truong at his company R2E in 1973, created the microcomputer Micral. President of Advanced PC Technologies in France.

Ed Roberts owned MITS, the company that developed and sold the Altair 8800 kit computer in 1975. Now a medical doctor.

FATHERS OF THE MICROPROCESSOR

Federico Faggin, **Marcian Hoff** and **Stan Mazor** of Intel, and **Masatoshi Shima** of Busicom designed the 4004, the world's first commercial microprocessor, released in 1971.

Federico Faggin Cofounder and chairman of the board, Synaptics.

Marcian "Ted" Hoff Chief technologist at Teklicon, a litigation

consultancy in San Jose, Calif.

Stan Mazor Now director of training at Numerical Technologies in San Jose and a recipient of the 2000 Robert N. Noyce Award from the Semiconductor Industry Association for his contribution to the invention of the microprocessor.

Masatoshi Shima Vice chairman, V.M. Technology.

Raymond Holt has brought suit for recognition of his team's development of the microprocessor at Garrett Aircorps Corp., in a classified project for the Navy in 1969. President/owner of The Cornerstone Co., a South Park, Pa.-based business solutions consultancy.

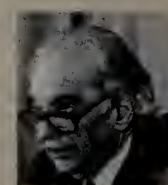
FATHER OF THE RELATIONAL DATABASE
E.F. Codd, while at IBM in 1970. Retired IBM fellow.

FATHER OF THE WORLD WIDE WEB

Tim Berners-Lee developed Internet-based hypermedia initiative while working at CERN, the European Particle Physics Laboratory, in 1989. Director of the World Wide Web Consortium, and he holds the 3Com Founders chair at the Laboratory for Computer Science (LCS) at MIT.

◀ **FATHER OF THE MOUSE**

Douglas C. Engelbart, while at Stanford Research Institute in the late 1960s. Director of Bootstrap Institute in Fremont, Calif., and winner of the National Medal of Technology in 2000.



FATHERS OF THE COMPUTER
John Vincent Atanasoff
(1903-1995)

Iowa State University professor, chief of the Acoustics Division at the Naval Ordnance Laboratory, founder of Ordnance Engineering Corp. in 1952.



Charles Babbage
(1791-1871) Cambridge University mathematics professor and polymath known for his contributions to the basic design of the computer in his Analytical Engine, never built in his lifetime.



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Off the Shelf

Edited by Carol Zarrow

Viva EVA

The EVA Challenge: Implementing Value-Added Change in an Organization
By Joel M. Stern and John S. Shiely

John Wiley & Sons, 2001, \$29.95
Economic value added (EVA) is not a new concept, nor is it short on big-name adopters (among them The Coca-Cola Co., Siemens and the U.S. Postal Service). What has been lacking is a how-to guide for chief executives who want to customize and implement an EVA program in their own organization.

As a discipline, EVA not only helps companies measure financial performance in a way that's more accurate and relevant to shareholders than, say, earnings per share (EPS), it also changes corporate priorities. This book is a readable discussion of the three systems—measurement, incentives and financial management—essential to any EVA program. It provides an implementation road map, discusses potential pitfalls, answers common questions and

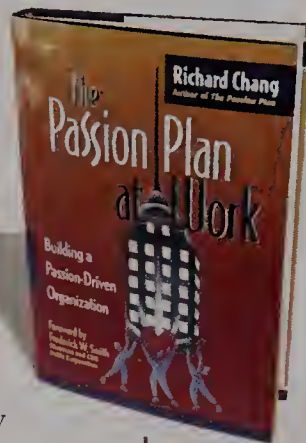
gives recipes for success with the real-world examples.

The authors occasionally bog down in excessive explanations of basic business concepts. And they tend to describe EVA as a methodological nirvana. Yet most of their discus-

sion is concise, relevant and practical. If you think EVA may be on the horizon for your organization, make sure you read this book.

—Katherine Noyes

And....



The Passion Plan at Work: Building a Passion-Driven Organization

By Richard Y. Chang
Jossey-Bass, 2001, \$24.95

Yes, yes, all companies should be steered by a big purpose. Let the heart prevail; Ben & Jerry's—that's the goal. Although my inner cynic demurs, there might still be hope. Slip a copy of this book into your CEO's briefcase. And retitle it *Making Big Changes in Small Minds at the Top*.

—Janice Brand

CIO Best-Seller List

5.

The HR Scorecard

by Brian E. Becker, Mark A. Huselid and Dave Ulrich

Harvard Business School Press, 2001

4.

Creative Destruction

by Richard Foster and Sarah Kaplan

Doubleday, 2001

3.

Now, Discover Your Strengths

by Marcus Buckingham and Donald O. Clifton

The Free Press, 2001

2.

First, Break All the Rules

by Marcus Buckingham and Curt Coffman

Simon & Schuster, 1999

1.

Who Moved My Cheese?

by Spencer Johnson

The Putnam Publishing Group, 1998

SOURCE: APRIL 2001 DATA, COMPILED

BY AMAZON.COM, SEATTLE

What They're Reading

Jim Woolen, executive director and CTO, Gwinnett County (Ga.) Public Schools Spencer Johnson, *Who Moved My Cheese?* (The Putnam Publishing Group, 1998) "While this is not a new book, its parables about change were timely reading [for me because] my organization is undergoing dramatic change. CIOs must be change agents, not merely custodians of the infrastructure." **Chris Anne Wheeler, executive partner, ActivMedia Research, Peterborough, N.H.** "In today's volatile business environment, *Who Moved My Cheese?* helps keep you focused on the ultimate prize. I often think about the reminders it gave me."

Editor's note: While professional reviewers have been less than approving, it's clear that readers find a lot to like in Who Moved My Cheese? In the three years since its publication, it has sold more than 4 million hardcover copies and has come out in paperback, audiocassette, CD-ROM, and foreign-language, large print and Braille editions. And it has inspired at least two parodies.



OPERATING SYSTEMS:

IF YOU CAN'T DECIDE, THEN DON'T.



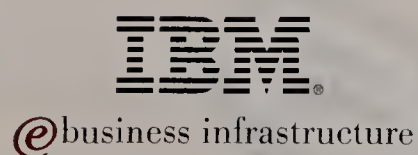
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MAKING DECISIONS is never easy. In fact, sometimes it's downright confusing. Take operating systems. Nowadays everyone is talking about the beauty of open standards platforms like Linux.[®] But you're not ready to abandon the proven mission-critical reliability of UNIX.[®] It's a real dilemma. You want all the familiar assurance of UNIX now, but you may want to try some Linux apps later.

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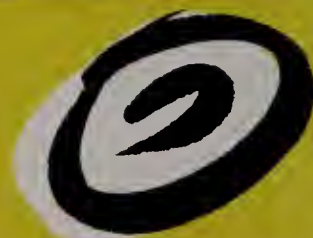
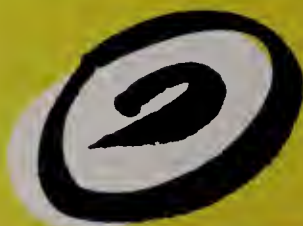
Just as ever, AIX is a proven infrastructure powerhouse, running on the world's fastest UNIX Web server, the IBM @server pSeries.¹ With the arrival of AIX 5L, the AIX family now runs Linux-based applications – so applications that run on Linux also run on AIX 5L. And interoperate smoothly across mixed environments. The best of both worlds.

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TAXI



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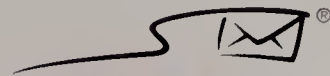


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Fine Print

What You Don't Know Can Hurt You

Mismatch?

Is your B2B collaboration risking an antitrust suit?

BY HILLARD STERLING

COMPANIES ARE INCREASINGLY forming and joining B2B exchanges to do business over the Internet. B2B marketplaces take many different forms, just as collaborations and joint ventures do offline, but they almost always involve some degree of information exchange or coordination between competitors. Whatever their form, they can offer your company huge opportunities to cut costs, realize efficiencies and enhance competitiveness. But with opportunity comes risk, and one of the biggest risks is the looming specter of antitrust challenges.

These antitrust risks are not merely speculative. Government agencies are actively involved in watching B2B marketplaces and assessing their competitive effects. The Federal Trade Commission recently announced that it is continuing to monitor one of the most highly visible B2B collaborations—the Covisint venture involving the Big Three automakers and others. The government is also watching various other B2B exchanges and an uncertain number are facing possible private antitrust challenges.

However, B2B participants are in a strong position to address these concerns. Even aggressive government regulators must concede that B2B marketplaces often enable their participants



to cut costs and streamline their operations, which arguably is a good development for competition, especially if these cost savings translate into lower prices for consumers.

Let's take a bunch of widget manufacturers, for example. Assume that these suppliers have developed an Internet market to sell their widgets through online catalogs. Here's what they should ask regarding potential antitrust problems.

1. How red are the antitrust flags?

Your exchange is more likely to attract antitrust attention if it has significant "market power"—the ability to restrict output, exclude competitors or raise prices. You should feel relatively comfortable if the collective market share of your B2B participants is less than 20 percent in each affected market, a safety zone defined by the government's competitor collaboration guidelines. But the more you move above this zone, the greater

ILLUSTRATION BY JEFF JACKSON

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the risk that the government or your competitors will place your exchange under the antitrust microscope.

Even assuming the absence of large market shares and clear market power, your B2B collaboration will face close scrutiny if its participants engage in conduct that is unlawful under antitrust principles. Woe to those participants who are work-

We're at the beginning of a new frontier of antitrust law, where rules are in flux and potential challenges are abundant.

ing together to affect prices or allocate markets. Our hypothetical widget manufacturers, for example, increase their antitrust risks exponentially if they are sharing cost data or drafts of future catalogs with each other. These violations, however, don't surface that often, because companies rarely engage in such blatant improprieties in easily detectable forums. Violators tend to stick with handshakes in smoke-filled rooms.

2. Can you identify and prove efficiencies?

If you participate in an exchange you should be prepared to show that it results in procompetitive benefits for the participants and the market as a whole. Such market benefits, or efficiencies, might include reduced administrative costs, enhanced systems integration or better supply chain management.

While it's crucial to argue that your B2B marketplace is creating these efficiencies, just arguing isn't enough. You need solid evidence that these efficiencies are real or at least plausible. Ideally, you want real-world evidence showing that your B2B participants are experiencing lower costs and enhancing the competitiveness of the marketplace (without raising unacceptable antitrust risks). Evidence of prospective efficiencies might help too, but only to the extent that you can demonstrate them through real-time business records, not just through documentation manufactured simply to shake off antitrust suspicion.

Our widget manufacturers, for example, should be developing specific estimates of the money and time they and their customers can save through electronic purchases. Perhaps they should hire consultants to estimate the reduced costs of completing electronic transactions compared with the standard sales process and all of its attendant paper, phone calls and delays.

3. Is the B2B venture the only game in town?

Exclusivity is an important factor in assessing B2B exchanges' antitrust risks. If B2B collaborations bar participants from leaving, the possible anticompetitive effects may become more tangible and definitive. They may also cause antitrust problems if

they block nonparticipants from joining. The challenge is that there may be legitimate, even procompetitive, business reasons for restricting the ability to join and leave B2B marketplaces.

The underlying question is whether a B2B collaboration's exclusivity affects the ability of participants and industry players to compete. This question requires an investigation to see whether competitively viable alternatives to the B2B exchange exist, and whether the exclusivity restrictions are tailored to accomplish their procompetitive purposes. The hypothetical widget manufacturers should be careful about precluding additional participation if nonparticipant competitors don't have the ability to form a competitive B2B marketplace. If widget sales alternatives are limited, at the least the exchange should enable participants to leave if they want to offer their widgets elsewhere.

4. Is the B2B exchange managed independently?

There are many possible ownership, organizational and managerial frameworks you can use to structure your B2B collaboration. But from an antitrust perspective, there are sound reasons why some frameworks are better than others. You run a higher risk of antitrust problems if you or your partners have contributed significant financial investments to the exchange that might reduce your ability or desire to compete independently. You also face greater antitrust exposure if your B2B venture is jointly organized and governed by participants instead of an independent third party. Our widget manufacturers will reduce their antitrust exposure if they establish their B2B marketplace as a separate entity with its own board of directors, officers and facilities.

5. Are B2B participants paying enough attention to these issues?

With the proliferation of B2B exchanges (approximately 1,300 in the United States and thousands more in development), the reality is that some are ignoring these important questions. Moreover, we're at the beginning of a new frontier of antitrust law, where rules are in flux and potential challenges are abundant. It's critical for exchanges to pay careful attention to their antitrust risks from the business-planning phase onward. Your B2B venture will more likely survive antitrust investigation and possible litigation if you face your antitrust risks head-on, aggressively identifying and addressing problem areas before others do. **CIO**

E-mail Senior Writer Eric Berkman about IT-related legal issues at eberkman@cio.com. Hillard Sterling (right), who practices IT law at Gordon & Glickson in Chicago, can be reached at hmsterling@ggtech.com.



PHOTO BY JOHN REILLY PHOTOGRAPHY

does the onset of e-Commerce
sometimes feel more like a disruptive
technological invasion
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Career Counsel

Mark Polansky Offers Advice to Aspiring CIOs and IT Managers

Eye of the Storm

Q: I recently took a senior IT director position at a division of a \$10 billion company in another state. I sold my house and bought another one in the new location. After three months, the job has changed significantly, and it is not what I was promised. Most of my employees are being moved to corporate, and I will play a very different role. I am tied to the executive team of the division and have fit in well, but I am sure I will miss having responsibility in the day-to-day operations. Should I look for a different position? If so, would a prospective employer view my short stay as negative?

A: You have landed in the eye of the storm between centralization and decentralization of the IT function in a multidivisional corporation. The good news is that what you have described as the new IT structure at your company sounds like the very smart middle ground of a “federal system” of IT, where the operational aspects are centralized as a shared services function (think of it as outsourcing your data center to corporate) and the functional aspects are decentralized to lie within the domain of the business unit. If running a data



center, help desk and telecommunications is what really gets you excited every morning, then you should look for a small-to medium-size corporate IT director position or a CTO role in a larger corporation with responsibility for those functions.

On the other hand, without the distraction of operations responsibility, you now have a great opportunity to focus on the strategic business-driven side of IT. So if you enjoy creating IT value with top- and bottom-line impact—through projects such as process reengineering, ERP, CRM and e-commerce—then hang in there and have a great time doing what good CIOs get paid for.

CIO POSITION

Q: I'm vice president of technology and CIO for a health start-up company, and I enjoy my job and work. I have the following questions: Should the CIO be involved in marketing strategies

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Career Counsel

and plans, since marketing depends on software applications and systems? Should the CIO be a member of the board of directors or a partner in the company? Should the CIO be involved in business alliances and partnership talks with third-party vendors? Which one is better describing a CIO in a high-tech Internet-based company: a highly technical person with fair management skills or a less technical person with strong executive management skills?

Management—perhaps better stated as leadership—is ultimately what the CIO role is all about.

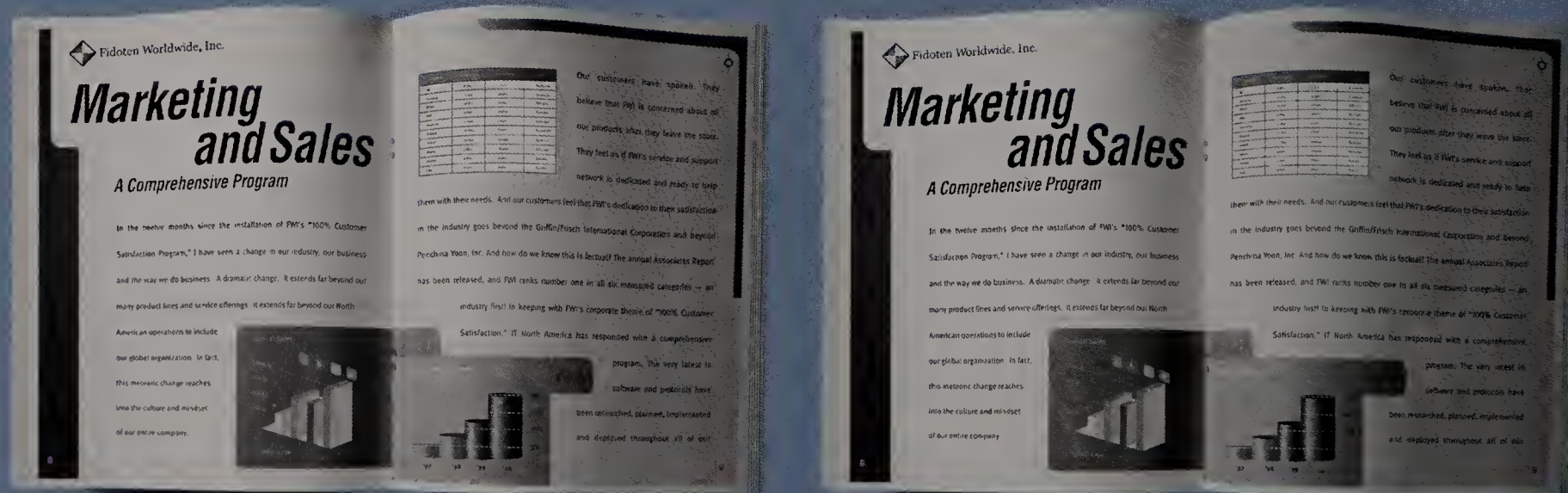
A: Because the CIO should be an integral part of the corporate executive management team, it follows that the CIO should be as involved in marketing strategic planning as any other management team member. He must also be intimately involved in executing the marketing plan starting at the tactical

planning level in considering, as you asserted, the necessary and enabling support provided by IT. The same goes for the CIO's involvement in creating strategic alliances and partnerships, especially as these have a significant impact on operational issues. But leave the negotiation part of the "talks" to the business development guys who are pros at that kind of stuff.

As for CIOs sitting on corporate boards: It's not at all common, but we are beginning to see a few CIOs on the boards of their established public companies for the first time, especially at technology-enabled companies and even more frequently on the corporate boards of technology suppliers. And most often we see CTOs sitting on the boards of privately held, startup and smaller technology and dotcom companies. If technology is to be a strategic rather than an operational factor, then I would like to see a board-level technology committee, with the same importance as the board's nominating, compensation and audit committees, having responsibility for ensuring appropriate corporate investment in and use of technology.

As to your last question, my answer is "none of the above." All my clients want me to find CIO/CTO candidates with strong technical and leadership expertise; anything else is a compromise. The combination of strong technology and weak lead-

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ership skills sounds like a staff job as chief architect or equivalent. A strong leader without a technological foundation should not be a CIO or CTO in my opinion.

RESPONSIBLE CIOs

Q: I am in the military and finishing up my master's degree in information systems technology. I also have a bachelor's degree in computer science. When it comes to a CIO's responsibilities, how much does a top-ranked CIO get involved in the areas of financial, technical and managerial responsibility to his department?

A: An excellent question. Let's look at each of these areas in turn. First, in financial matters, budgetary responsibility and control have become absolutely critical in light of the proliferation of new technologies and new ways to spend money in IT. And, in general, budgets become much more complex and demanding as the size and scope of an organization increases. In most of the largest IS departments run by the top CIOs, there is an IT controller responsibility and a permanent position on the CIO's staff. Additionally, the requirement to initiate cost-saving and revenue-generating systems projects, whether funded

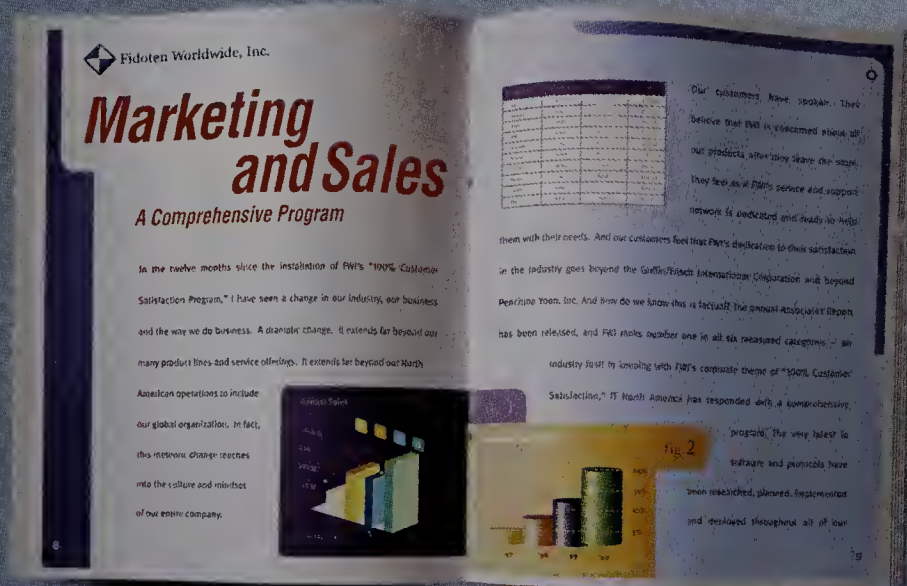
by IS or by the business sponsor, demands that good CIOs understand how to craft and present a financially sound proposal however it is measured—whether by ROI, internal rate of return or some other metric.

Second, sound technical knowledge and awareness are always important for a good CIO to maintain, especially when considering strategic and architectural IT issues and decisions. As size and scope enlarge, the best CIOs will have a trusted deputy, either an in-house CTO or an outsourced vendor, to take responsibility for the day-to-day technical issues and problems so that the CIO can focus on the bigger, more business-driven decisions for IT.

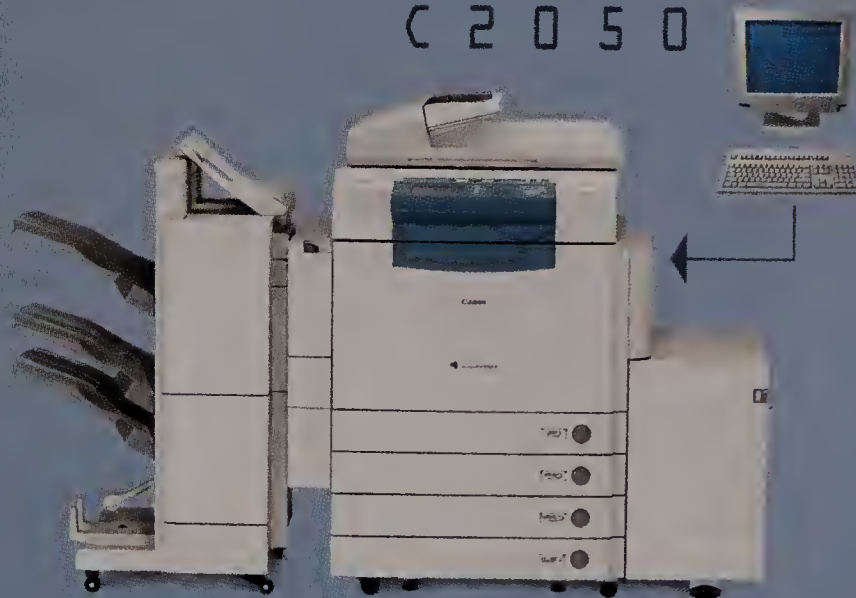
Last, management—perhaps better stated as leadership—is ultimately what the CIO role is all about: creating and articulating a vision that IS and the whole enterprise will enthusiastically endorse and then leading the execution and delivery of that vision. The top-ranked CIOs know that this is where value, both personal and shareholder alike, is created.

E-BUSINESS EXPOSURE

Q: Is e-business a valid MBA concentration for people interested in the area from a business perspective? In my opinion, you need



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other skills—IT, operations, marketing—to be a successful e-business manager.

A: Yes, I believe that e-business is a valid MBA concentration, in the same sense that marketing or retailing is a worthwhile major for graduate studies. You are correct in saying there are many functional disciplines that compose a complete e-business model (just as is true in a traditional channel business model) and its component functions and processes, including IT and operations.

But I am assuming that an e-business MBA would include appropriate exposure to each of these and might also include a complementary minor, perhaps in technology or even in merchandising, depending on the individual's point of interest. The key is to think of e-business from a big-picture perspective.

Have a career question?

Visit our website at www.cio.com/counselor and pose your own question to Mark Polansky.

FIVE YEARS OUT

Q: I'm in a senior management position in the field of telecom engineering and administration, but I am looking to advance my career. What do interviewers really want to hear when they ask, "What is your five-year plan?" or "Tell me where you would like to be in five years?"

A: Prospective employers—first and foremost—want to hear a truthful and convincing answer so that they may gain a sense of you and your vision of who you are. Let the truth come forth, and in that way both of you can avoid a hiring mistake. If you are really looking for a company with lots of advancement potential, then say so. And if that interviewer is looking for lifetime cube dwellers, then you can rightfully shake hands and walk away.

ACADEMIC NO MORE! MAYBE.

Q: I have more than 25 years of IT experience—17 in increasingly responsible management positions in the insurance, oil and gas industries, engineering and higher education. My previous position was CIO of a large corporation, and I have been director of IT at a major research university for almost four years. How do I stop executive search people from calling me an academic when 21 of the last 25 years have been in the private sector?

A: Human nature being what it is, many of my colleagues and I have a terrible habit of putting people in boxes based on first impressions and assumptions that may or may not be true. With 25 years on your odometer and having gone from CIO of a large corporation to CIO of a university with a more-than-likely significant pay cut, I admit that until you prove me wrong, I would guess you either got burned out in industry, lost your job and had difficulty replacing it, or are fulfilling your dream of finishing your career back on campus.

So the issue is not that we think of you as an academic, but that we think of you as an academic now. If you want to break through this wall, you must satisfactorily explain to the world why you went into higher education IT and why you want out after four years. Do that and you should have no problem getting back into industry in this wonderful economy.

By the way, there is currently a significant shortage of good university CIOs, particularly at Carnegie Level R-I and R-II institutions, that might present opportunities worth your consideration at some of the United States' top schools.

FACE-TO-FACE VALUE

Q: I have been in the IT industry for eight years and have progressed from an engineering director to a professional services director. My salary is between \$60,000 and \$70,000. I have an opportunity to interview for a director position that pays in excess of \$200,000. Should I list my salary on my résumé?

A: Compensation should never appear on a résumé since it is premature to allow this information to affect a reader's judgment about your qualifications and credentials, and it may give rise to erroneous assumptions regarding your value based on current remuneration.

In this particular case, you appear to be significantly underpaid, and presenting your current salary—out of context and without explanation—could have a negative impact on your candidacy. Having said that, it also never pays to misrepresent salary, even verbally, since it can be easily checked in today's data-rich and wired world. You are far better off presenting the facts just as they are and adding the proper perspective in a face-to-face interview. **CIO**

Mark Polansky is a managing director and member of the advanced technology practice of Korn/Ferry International in New York City. He is also the chairman of the Greater New York Chapter of the Society for Information Management. The Web-based Executive Career Counselor column is edited by Web Research Manager Kathleen Kotwica. She can be reached at kkotwica@cio.com. Have a career question? Visit www.cio.com/counselor and pose your own question to Mark Polansky.



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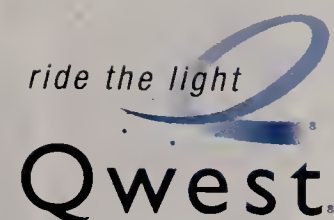
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HIRING, FIRING, INSPIRING

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SimManager

Motorola turns to online simulation to develop its future leaders

BY POLLY SCHNEIDER TRAYLOR

Got a great management story to tell? Send it via e-mail to Management Editor Edward Prewitt at hotseat@cio.com.

ZENGLO CHEN REPORTS TO WORK, EAGER TO begin his first day on the job as a product manager at GlobalCom, an electronic games manufacturer. He logs on to his computer, sips his coffee and—wham! In the first five minutes at his desk, Chen receives eight e-mails marked urgent: one from his boss and the rest from other senior man-

agers in the hardware peripherals group. While he's diving into the first assignment, an operational review of his department, the phone rings. It's the receptionist wanting to patch through an irate customer demanding to know why his product delivery is late. After calming the customer's nerves, Chen looks back at the computer where another

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10 e-mails and a video-mail from HR asking him to screen and recommend internal candidates for a key IT position await his reply. What to do first? Follow up on a product glitch or get moving on his supervisor's request to meet with another business unit about sharing their new wireless technology? Before he can even pick up the phone to call his boss, it rings—this time it's one of his employees. Her long-simmering dispute with a manager in the Asia office has blown up and she wants Chen's backing. A few hours later, Chen fires off one last e-mail before lunch. He stands up and with a sigh of relief thinks, It's just a game, thank God.

In real life, Chen is a manager in the office of leadership at Motorola's headquarters in Schaumburg, Ill. His hectic "first day on the job" was a four-hour multimedia management simulation that Motorola uses to assess and develop its middle managers across the globe. The struggling communications giant hopes its new Web-based skills assessment tool, Aon Consulting Worldwide's Catalyst software, will help managers change with the times and become the company's future leaders.

Like many large manufacturing companies, Motorola has been blindsided by the ruthless pace of its global competitors—Ericsson, Nokia and Qualcomm—and a marketplace that requires agility, customer focus, and leaders who know how to collaborate and can thrive in chaos. Online management simulation holds promise for companies that need an accurate and efficient way to hone managers' skills. E-learning can also save companies a lot of money in travel costs and instructor fees. But the programs aren't perfect, and they will never substitute for the human touch of coaching.

Change the Management

For Motorola, speed is the missing ingredient. After several quarters of declining market share in the mobile phone industry, the company has embarked on a gargantuan restructuring and reorganization project, closing plants and laying off 22,000 workers (15 percent of its workforce) since last December.

AT A GLANCE

Inside Motorola

The Company: Motorola (www.motorola.com) makes communications gear for consumers and businesses worldwide. Revenue for 2000 was \$37.6 billion.

The Challenge: The company's restructuring from a segmented old-school manufacturer to an integrated software provider is spurring the need for a middle-manager makeover in its ranks.

The Solution: Motorola hired Chicago-based Aon Consulting Worldwide to develop an online management simulation, which also integrates data from third-party assessment tools into a profile of a manager's strengths and weaknesses. Motorola hopes the tool will help identify future leaders and energize its skills development program.

Motorola executives came to the stark realization that the company's managers did not have the fast-company skills necessary to win in the global marketplace. "In a lot of our markets there is no management talent, period," says Kelly Brookhouse, a director in the company's office of leadership and organization effectiveness. Motorola's plan to correct that is twofold: managers in Asia and Eastern Europe need basic management-skills training, while managers in the United States and Western Europe need to learn how to move faster and adopt a global perspective. "We're really trying to get people to think of the big picture for the company and what consumers need," Brookhouse says.

Because Motorola's approximately 30,000 middle managers are spread all over the world, online training is a natural fit. In September 2000, the company's China office served as the pilot site for Catalyst, an application developed for Motorola by Chicago-based HR consultancy Aon as a version of its Leader product. So far, 50 managers have gone through the simulation. By the end of the year, the China office plans to assess up to 250 managers who previously have demonstrated above-average performance. "What we're measuring is how well the employee is able to solve management problems, customer issues, staff issues and collaborate with other departments," Brookhouse explains. Down the road, she would like Catalyst to play a hand in determining promotions. It is still too early for hard results from the China experiment, but Brookhouse says the feedback has been overwhelmingly positive: "The depth of insight to the manager is amazing."

Mandy Chooi, a Singapore-based regional manager in Motorola's executive assessment and development programs department, says the simulation helped her learn how to tailor her decision-making approach to the situation, rather than getting stuck in her usual pattern of analyzing data first. Chooi also realized the importance of managing priorities: "It's better to get a few important things done and not stress about getting everything done."

Management simulations and assessment programs have been around for 30 years. Increasingly, these tools and courses are going online in applications developed by boutique consultancies such as Aon or large companies such as IBM. The appeal of e-training goes beyond cost-effectiveness, says Kirk Rogg, a senior vice president at Aon who spearheaded the Leader project. Managers can't or won't take three days out of a workweek to go to training centers, nor can the traditional training classes replicate real-life management problems as well as Catalyst can, he says.

For management simulations to work they must accurately portray the manager's

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HOT Seat

job and business environment, says John Ivancevich, a management professor at the University of Houston who does research on organizational behavior. "If the average manager receives 45 e-mails a day that require immediate responses, and a simulation gives you 150 e-mails a day, that's not realistic," explains Ivancevich, who's also an e-learning consultant and board member of e-learning company High Tech Campus.

part of the company's management education program offered through Motorola University.

Assess the Assessment Tools

There are many management assessment tools on the market, and companies must know how to select one and use it properly. Ivancevich advises companies to develop a profile of their typical manager as a proto-

patience. Chooi found some annoying glitches with Catalyst's e-mail simulation. To head off some of these problems, users need access to a live instructor during the training, says Masciarelli. Motorola employs onsite test administrators for this purpose.

There are larger concerns with training managers online. Masciarelli, for one, does not believe e-tools are effective unless combined with the classroom. Managers and executives respond more to face-to-face interaction than to a computer program, he says. "[Managers] know that the training is a second order of magnitude, and the first is to get their people aligned and talking with each other."

Even so, Brookhouse remains upbeat about the tool's long-term impact at Motorola. She believes that Motorola's careful design of the system and the eventual plan to institutionalize skills development of managers and tie rewards to performance will ensure the program's success. Her biggest hurdle now is funding. Hiring and training the assessors is a costly exercise, and the slowing economy is preventing Motorola from quickly expanding the project. "I'm frustrated that we have to scale back now," she says.

Finally, the success of Motorola's leadership development program rides on the thorny yet age-old training problem of skills retention. Too often, employees leave the learning in the classroom. Even Chen, a career development manager no less, did not create a development plan after going through the simulation. Why not? "My own laziness," he says.

Experts seem to agree that a follow-up process is crucial. Masciarelli insists that participants should receive rewards and recognition for performance improvement. Senior managers should use the employee profiles in a controlled and confidential way to make decisions, Ivancevich adds. Otherwise, the fancy reports get stuffed into a drawer, just like any other training information—online or not.

Polly Schneider Traylor (polly@traylor.us.com) is a freelance writer in Boulder, Colo.

"In a lot of our markets there is no management talent, period. We're really trying to get people to think of the big picture for the company and what consumers need."

—KELLY BROOKHOUSE, DIRECTOR OF PROGRAM DEVELOPMENT,
OFFICE OF LEADERSHIP AND ORGANIZATION EFFECTIVENESS, MOTOROLA

Chooi and Chen think the simulation is on target. "[Managers'] days are that hectic," Chooi says. The system was designed to force employees to make decisions with incomplete information and prioritize multiple tasks and interruptions. After the simulation, Chen recalls, "I was exhausted. The time went by very fast, and you're in high reactive mode."

Catalyst runs on Motorola's intranet, so it's easily accessible to managers anywhere, anytime. But the system requires facilitation by a trained "assessor" who works closely with employees, interviewing them before the simulation, participating in telephone role-plays, analyzing and tweaking the employee profile that the software generates, and discussing the results with the manager. Aon built a report generator that can integrate data from the simulation with third-party assessment tools, such as 360-degree surveys, personality tests and leadership inventories, into a profile of the manager's strengths and skill gaps. The manager and his supervisor then create a long-term development plan. Brookhouse hopes that Catalyst will become an integral

type for modeling the simulation. Companies should also have a psychologist review the normative data of the test and the credentials of the testing partner, he suggests. Then there is the problem of accuracy. Verbal and quantitative skills are fairly easy to measure, but beyond that it gets murky. For instance, an aspiring manager could fake her interests or leadership style in order to get a promotion, Ivancevich says. Stereotyping is another issue. "People go through the assessment and walk away with their 'type,' and then they put a label on themselves and other people," says Jim Masciarelli, CEO of Archer Development, a change management and executive coaching consultancy in Gloucester, Mass. For this reason, Masciarelli has scaled back the use of assessment tools in his practice in favor of on-the-job coaching and other hands-on approaches.

The bigger issue, perhaps, is motivating managers to use the tools and devote the time. "Managers are still squeamish about going through the four-hour process," Brookhouse says. And if the multimedia software is sluggish and the system has poor navigation, employees will quickly lose

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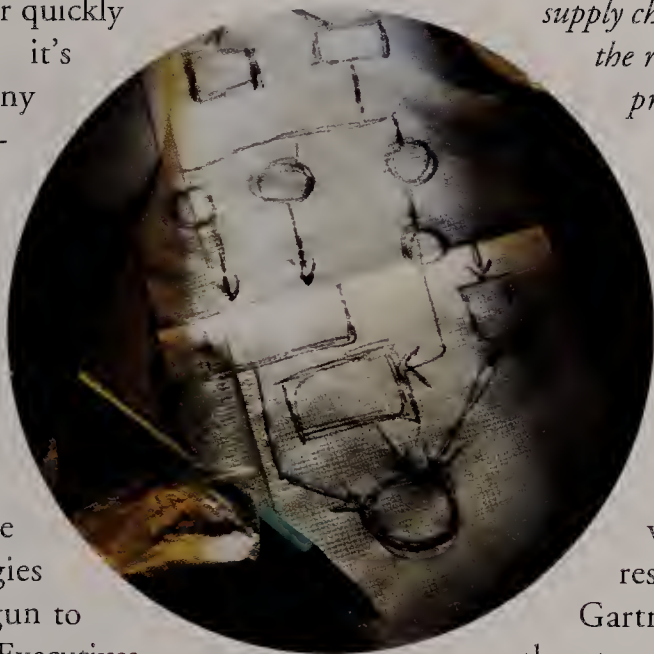
Despite a growing awareness that *knowledge equals intellectual capital*, corporations have struggled to find beneficial ways to effectively capture and commoditize knowledge. Partly that's been because such efforts cost a lot and the payback hasn't always been obvious or quickly forthcoming. Partly it's been because too many knowledge management (KM) initiatives have stood alone, facing off against thoroughly resistant corporate cultures.

Now, however, this long struggle toward implementing effective knowledge management strategies and solutions has begun to gain real momentum. Executives have realized that staying competitive really does mean that:

- *virtually everyone in the enterprise must acquire a new kind of knowledge—knowledge about customers and the value chain that feeds them.*

- *this knowledge must be available for use and reuse to the right people at the right time or the enterprise will lose marketplace momentum.*

- *knowledge and skill sets must be explicitly included in an extended enterprise's supply chain—made available at the right time and in appropriate quantities for workers and their tasks—in order to maximize their usefulness and value.*



"Companies will be pulled toward knowledge management," observes Kathy Harris, vice president and research area director at Gartner, "by competitive threats or by the intellectual assets sharing required in value chains and collaborative commerce."

This CIO Strategic Directions supplement explores why a commitment to corporate knowledge management and e-learning matters. **SD**

Knowledge management defined

Knowledge management is an integrated, systematic approach to identifying, managing and sharing all of an enterprise's information assets, including databases, documents, policies and procedures, as well as previously unarticulated expertise and experience held by individual workers. Fundamentally, it is about making the collective information and experience of an enterprise available to the individual knowledge worker, who is responsible for using it wisely and for replenishing the stock. This ongoing cycle encourages a learning organization, stimulates collaboration and empowers people to continually enhance the way they perform work.

Source: Army Knowledge Online—An Intelligent Approach to Mission Success, U.S. Department of the Army.

STRATEGIC DIRECTIONS

June 15, 2001

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What it Means to Manage Knowledge

**Redefine knowledge as the analyses, insights and human experience.
Then focus on managing and exploiting that knowledge.**

Consider the advantage that accrues to companies with superior knowledge of their supply chains and the understanding that the conventional 30-day payment cycle is in its death throes.

The cycle is tightening fast: orders no longer take several days to book, many don't need 15 days to ship and the bank doesn't need a week to handle the transaction. But it's taking awhile for business practices to catch up to this new reality. In the interim, supply-chain-smart organizations can exploit the float: get payment from customers at Internet speed, pay sup-

pliers at conventional speed. Inventory—and the capital volatility that's sometimes associated with holding it—can be kept out of your supply chain until it's just-in-time.

The knowledge culture

Knowledge happens when human experience and insight benefits from recognizing patterns in data and/or information (data in a specific context).

"Companies need new ways to penetrate and dominate markets, improved employee recruitment and retention, bet-

ter and more rapid development of new products and services, and orders-of-magnitude improvements in how business is done," asserts Russell Caldwell, founder and chief technology officer at Novient. "Mere information cannot hope to do all these things—such fundamental changes require the generation and effective deployment of a culture that shares and uses knowledge."

Thus knowledge management (KM), say Lori Wizdo, vice president of knowledge management at Unisys Corp., is "a system of structures, processes and technologies

Integrated E-Learning Solutions in Multiple Internet-Based Formats

As a pioneer in next generation e-learning, KnowledgeNet has three major differentiators: its partnerships, high pass rate for students and technology.

The company has a close relationship with Cisco Systems and is the only e-learning vendor in whom Cisco has invested. An early advocate of the benefits of e-learning, Cisco uses KnowledgeNet technology to train its more than 40,000 resellers worldwide on Cisco products. This includes both Cisco Partner sales and technical staff. KnowledgeNet also has significant partnerships with industry leaders such as EMC Corp. to provide their content in an e-learning format for worldwide delivery.

Survey Reveals E-Learning Beats Traditional Classroom Training

KnowledgeNet has the highest pass rates in the industry and is the only e-learning company that has validated its students' pass rates with an independent outside firm. The recent CMP Media survey revealed that KnowledgeNet e-learning beats traditional classroom training, with 94 percent of KnowledgeNet students passing their certification exams, and 85 percent doing as well or better with e-learning from KnowledgeNet than with traditional classroom training.

KnowledgeNet's technology has earned it more than a dozen awards in the last year, including the Macromedia e-learning award for

Best Corporate Training application, Brandon Hall of Fame gold and bronze medals in the Information Technology category, the Information Technology Training Association Award for Excellence, and the United States Distance Learning Association Award for Excellence. The company is a Cisco Learning Solutions Partner (CLSP) and a Microsoft Certified Technical Education Center (CTEC) as well as a Microsoft Certified Partner.

KnowledgeNet's e-learning platform, Monsoon™, enables the company to be the only e-learning vendor to provide integrated e-learning solutions in multiple Internet-based formats, including synchronous (live) and asynchronous (self-paced), as well as mobile e-learning available on handheld devices.

Founded in 1998, KnowledgeNet is a privately held company based in Phoenix, Ariz. The company is backed by Cisco Systems, Morgenthaler Ventures, Sierra Ventures, Trinity Ventures, and Berkeley International Capital Corp. KnowledgeNet customers include blue chip companies such as Cisco Systems, EMC Corp., GE, Georgia GLOBE, Lockheed Martin, Sun Educational Services and WorldCom.

Visit KnowledgeNet on the Web at www.knowledgenet.com. For more information, call 888 688-3716.

that inspire people to share what they know and use what they learn." KM involves:

- Capturing the patterns recognized in human experience and insight (knowledge) and making them available to and reusable by others.
- Making it easy to find and reuse this knowledge, either as explicit knowledge that has been recorded in physical form or timely access to a human expert's tacit, intuitive knowledge.
- Aiding and abetting collaboration, knowledge sharing and continual learning.
- Improving decision-making processes and quality.

"Knowledge management is a business strategy that fundamentally changes the behaviors of an organization," contends Wizdo. "It is so fundamental that it requires calibrated strategies and tactics in every core business function. If the CEO and the executive management team are not the sponsors of a KM strategy, there is no chance KM can play a role in transforming the organization."

Benefits

"KM benefits are best achieved," says Kathy Harris, vice president and research area director at Gartner, "when KM is linked to a specific business initiative that clearly provides specific benefits or value to the business."

The effort is worth it. KPMG Consulting's "Knowledge Management Research Report 2000," in which 423 organizations were queried, notes that 71 percent of those surveyed said they had achieved better decision-making thanks to their KM efforts, 68 percent said they had achieved faster response to key business issues and 64 percent said they had delivered better customer service. Fewer of those with a knowledge management program complained about reinventing the wheel, more can access customer profile data faster and more can access an accepted business process methodology faster.

Meanwhile, the Conference Board survey indicates that when organizations

improve the ways they utilize knowledge they're able to:

- make decisions faster and closer to the point of action.
- condense product development times.
- improve customer relationships.
- create more opportunities for innovation.

For some businesses, KM has produced impressive results:

- Dow Chemical saved \$40 million a year through reuse of patents.
- Ford Motor Co. saved more than \$600 million over three years.
- Roche products get sent to the FDA approval six months faster.
- Royal/Dutch Shell's deployment of a best-practice sharing methodology from Ford Motor Co. in two pilot communities of practice realized cost avoidance and savings of more than \$5 million in four months.

The importance of a knowledge strategy

Knowledge management, most experts agree, is overwhelmingly a cultural undertaking. Before deciding on knowledge management technologies, CIOs have to know what kinds of knowledge your orga-

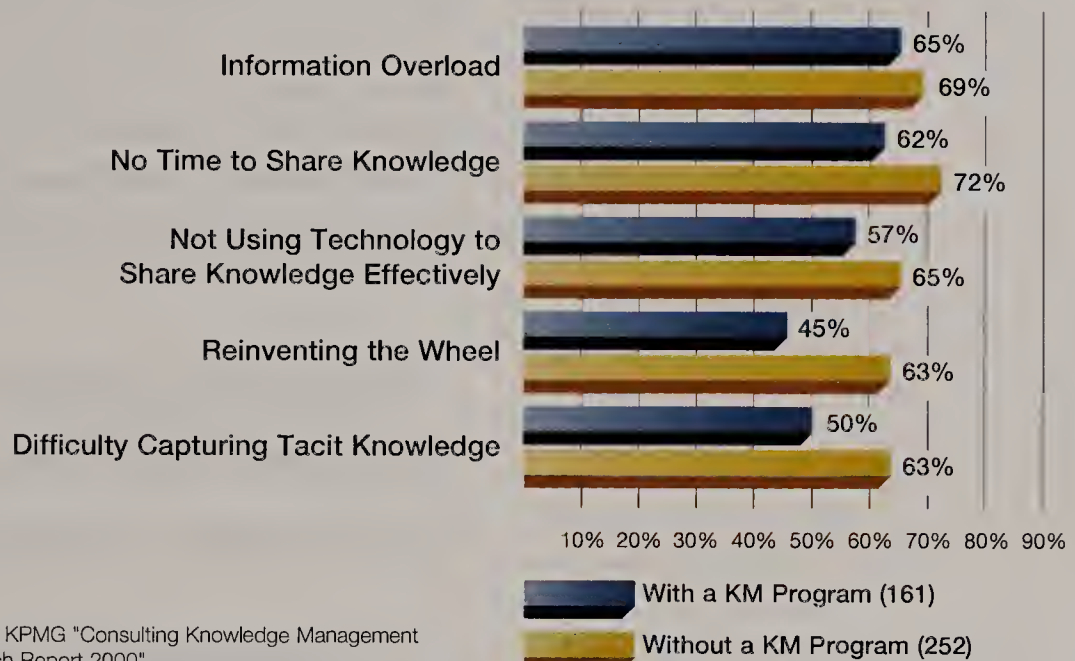
nization's employees need to share and what techniques and practices should be implemented to get them to share.

Which is to say: You need a knowledge strategy. Thinking through a knowledge strategy begins with answers to these questions:

- *Why do we need to manage knowledge?* Focus on a real business need with an eye to reducing asset intensity and improving revenue collection. As you review current business practices and existing technologies, look for operations in which an ability to capture and reuse knowledge will improve efficiency, lower costs and boost profits. Look also for knowledge gaps and their origins—are they about systems, processes or people? And then plan and execute a clear strategy to address these problems at their source.
- *How do we know it's working?* Since knowledge exists in context, generally you'll see success or failure indirectly, by measuring the impact of new tools and practices on your business. To know how any initiative performs, you'll need to benchmark performance both before and after it's been implemented.
- *How can we get better at sharing*

Current Knowledge Management Problems

Base: All Respondents Who Could Classify KM Status (412)



knowledge? Whether they intend to or not, most organizations reward those who hoard knowledge.

"Sharing knowledge is a cultural change issue," points out Gartner's Harris. "For enterprises that ignore it, the drain on intellectual capital and negative leveraging will continue, since any employee that leaves an enterprise takes what they know with them."

Advice from the trenches

Those surveyed by KPMG Consulting point to a "lack of user uptake" and a failure to integrate knowledge management into everyday working practices as reasons that knowledge management initiatives were disappointing. This fate can be avoided. Here are some suggestions:

Knowledge management efforts should be tightly bound to a high-priority business objective. Don't do KM for KM's sake. Learning and knowledge sharing become culturally embedded more quickly when knowledge and learning objectives are articulated in the language of an organization's business objectives.

Successful knowledge management is an integrated activity involving people and processes as well as technologies. It's not a project, it's a never-ending integrated process; it's the implementation of a competitive strategy which appreciates that learning and sharing knowledge are equally important.

Before even thinking about technologies, it's important to have a knowledge strategy that's aligned with your organization's business strategy, and make sure the strategy defines key knowledge management processes: creating new knowledge; identifying, capturing, mapping, sharing, applying and reusing knowledge; protecting and securing knowledge assets. Also make sure that these processes address issues about content, intended uses, expected results and turnaround speed.

Remember:

- *an organization committed to learning and sharing knowledge depends on trust.* Without trust, employees worry that the business may someday not

need them and they revert to knowledge hoarding. But be careful how the organization rewards knowledge sharing; ill-considered incentives can produce unintended consequences.

- *encouraging ad hoc connectivity between people is generally more successful than trying to create broadly accessed knowledge databases.* Most people learn and share knowledge, including applying, refining and re-

A knowledge strategy reflects and serves a business' goals and attributes.

using it informally on the job. Thus it's important to support multiple knowledge transfer channels and ways that enable people to freely interact.

- *implement and use technologies that reflect the way your business and its employees work.* Don't make the organization contort to fit the technology,

and always remember that knowledge management technologies cannot replace human interaction, which is critical for building trust and solving problems.

Develop an overarching architecture for knowledge management that includes standards, technologies, processes and frameworks. Having created an environment for managing data and then for managing information, competitive necessity has now called on organizations to create an environment for managing knowledge.

Tried- and true- methods—process management, teamwork and continuous improvement benchmarking—are effective in implementing knowledge management and learning practices. "KM ROI has a dual focus," explains Gartner's Harris. "The enterprise is an investor but so is the employee—they are the 'owners' of the knowledge they contribute. Both investors expect benefits. An ROI that does not consider the employee side of the investment and benefit equation may miss its mark and fail." **SD**

Knowing—and reshaping—your organization's knowledge processes

"Our highest-value knowledge is not written down, so what we 'know' is largely unknown and inaccessible to those who need it," says Lori Wizdo, vice president of knowledge management at Unisys Corp.

That's why identifying, capturing, sharing and reusing organizational knowledge is a key goal of so many knowledge management initiatives and is best accomplished by those who take time to understand their organizations' knowledge processes.

Kathy Harris, vice president and research area director at Gartner, advises sharing tacit knowledge in a couple of ways:

"Find creative ways to capture knowledge in explicit form," she suggests, such as developing templates or forms for text and graphics capture. Also, invest in real-time collaboration tools or processes. These, Harris says, may be as simple as instant messaging or more complex, shared white boards or collaborative design and project management tools. Nontechnology real-time tools—such as peer review programs, communities of interest or practice, mentoring programs and classroom instruction—can be important too.

But before doing any of this, Harris warns, organizations should formally analyze what tacit knowledge—that which is intuitive, based on experience and often most effectively shared in face-to-face interactions—should be shared. Outcomes and benefits as well as both obstacles and enablers need to be identified.

From Data to Information to Knowledge—to Results

Information overload is the leading problem in knowledge management and contributes to other problems, such as less time to share knowledge and reinventing the wheel.

“**K**nowledge management is not just a passive activity, like going to a library and doing some research,” observes Geoffrey Bock, senior consultant at the Patricia Seybold Group. “Rather, knowledge management is fundamentally active—people need to have access to the right information at the right time. Knowledge management needs to be proactive, tightly integrated with business processes and integrally related to day-to-day operational activities.”

Data capture and content management

“According to the Meta Group, the average company managed 100 gigabytes of information in 1998. This will increase to 2500KB in 2001, an exponential growth that is not expected to even slow over the coming decade,” notes Jim Nisbet, senior vice president at Semio Corp.

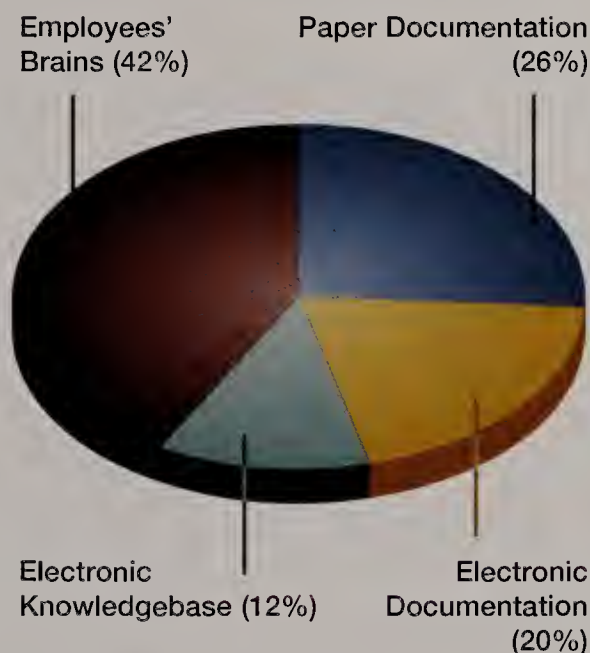
“Companies that invest now in management technology,” says Nisbet, “will be able to stay ahead of the curve. Companies that delay by a year or two may lose all ability to effectively amass their data, much less provide intelligent, convenient access to it.”

Those wanting to manage and control the huge amounts of information contained in their unstructured text documents need content management solutions “with an explicit focus on security, access control and an expansive taxonomy of terms that are oriented around a problem-solving focus,” says Bock of the Seybold Group.

Cleaning up your archive act

“First, before applying technology, enter-

Repositories of Corporate Knowledge



Source: Copyright © The Delphi Group

prises should clean up their act on their current archive of documents,” advises Kathy Harris, vice president and research area director at Gartner. “Managing unneeded documents doesn’t increase the value of the documents or the efficiency of the firm.”

Once this is accomplished, organizations can consider the technology alternatives for managing unstructured text documents:

- *Document management*, a mature set of technologies that manage internal documents from creation to elimination.
- *Broader content management for internal documents and Internet-enabled content*. By tagging digital content with

common descriptive mechanisms for data representations and exchange, the activities and transactions of multiple processing technologies—workflow, integration software and middleware, business applications—can be unified and coordinated.

Text mining

Cyveillance reports that as of midyear 2000, the total number of pages on the Internet topped 2.1 billion; this year, the company predicts, there will be more than 4 billion pages. The average webpage is 10KB in size, contains 23 internal links, 5.6 external links and 14.4 images.

Add in the terabytes of unstructured documents in corporate file systems and databases, and it’s easy to see why organizations are interested in text mining technologies that ratchet up automated analysis and classification of natural language communications.

“People will search for what they *know* is in a document collection. But they generally won’t or simply can’t specify a query for what they *don’t know* is in a document collection,” observes Semio’s Nisbet. “The art of effective text mining is to use computation power to suggest relationships that may well lead to new knowledge discovery on the part of the user.”

Megaputer’s TextAnalyst—which employs linguistic and neural network technologies to do semantic analysis, navigation and search of unstructured texts—is used by Clontech scientists to help them find valuable information more easily in content-rich scientific publications.

Gartner Research Director Alexander

What would have
happened if
Napoleon had
our technology?

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Napoleon was exceptionally intelligent and prompt to make decisions. In other words, the quintessential CEO. But, ultimately, his hopes of accelerating growth and managing a global empire came to an abrupt end.



However, let's imagine for the sake of argument that Napoleon had been able to leverage Novient's technology.

(He would probably have preferred a dozen Stealth bombers, but we'll let the Pentagon run that ad.)

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Alright, so the revolution is over and Napoleon must get France in order.

No problem. Novient's technology enables him to optimize the allocation of government activities with his most qualified workers. Moreover, he's able to locate and recruit the best talent available. Having dramatically increased the efficiency of his government, Napoleon takes off with his armies to expand his empire.



He's able to prioritize which countries to attack and when, based on availability of troops and supplies. In fact, he's able to determine which battles will presumably lead to the most success, so he's quickly running over one country after the next.

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Generals are collaborating in real-time with cannon, gun, and ammo makers; ensuring invasions are planned according

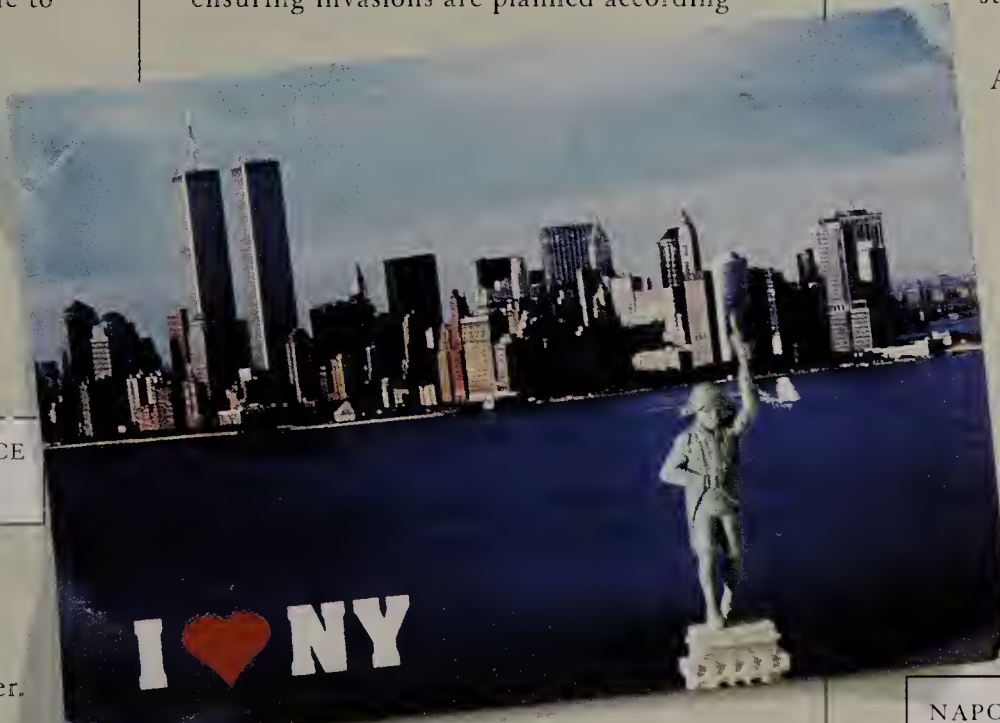


proactively decides sending 600,000 troops in the middle of winter to knock on Alexander's door in Moscow isn't exactly the best idea.

With Novient's technology, Napoleon could have created a global empire that might still be dominating the world today.

And being French, you'd now have three hours in the middle of the day to eat lunch and take a nap.

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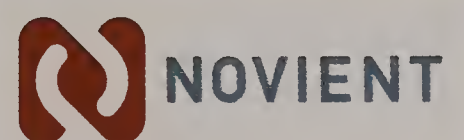


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NAPOLEON GAINS VISIBILITY
INTO NEW OPPORTUNITIES

all battlefields is positively impacting strategic and tactical decisions, allowing Napoleon to redefine goals and priorities. In fact, with a detailed report on weather conditions, he



intelligence³

Linden describes four kinds of text mining applications:

Text categorization uses statistical correlations to construct rules for placing documents into predefined categories.

Topic-based clustering of documents via linguistic and mathematical measures of content similarity without using predefined categories. The result is generally a taxonomy or a visual map which delivers a quick overview of large amounts of data. Examples include Semio's Taxonomy and IBM's Intelligent Miner for Text.

Semantic nets, or link analysis, which measure occurrence of key phrases in a document to aid navigation. Semio's SemioMap is a semantic net tool, as is Megaputer's TextAnalyst.

Fact extraction, or information tagging, seeks to derive certain facts from text to improve categorization, retrieval and clustering. IBM's Intelligent Miner for Text does fact extraction.

"Using a library analogy, our technology does the equivalent of opening a book in front of a reader with the relevant concepts highlighted versus handing the reader a large stack of documents and stating

that the info they need is somewhere within," explains Claude Vogel, founder and chief technology officer of Semio.

Business intelligence & decision support: it's about analysis

Tools that analyze data and information to help human beings acquire knowledge are now much more accessible to a larger swath of employees, thanks to graphical user interfaces, Web-enabled applications and simplified languages that make possible data analysis from desktop computers.

**Through 2004,
enterprise mailbox volume
is expected to increase
40 percent each year.**

Powerful analytic capabilities can be mustered when business intelligence (BI) systems—which include query and reporting tools, data mining and online analytical processing (OLAP)—are linked to customer and trading partner information sources. Then automated analytic process-

es can spot patterns on which are based predictions and suggestions that aid sales and efficiency initiatives. Harmony's Symphonx' suite of business analytic applications aggregates data from across the corporate enterprise, providing visibility to enterprisewide data and delivering the results in real-time.

To maximize the value of analytic tools, they must be matched to the needs and goals of one's enterprise. Vendors have responded with analytic tools that are increasingly integrated and specific.

PeopleSoft's Business Analytics offers a variety of domain-specific business analytics, including workforce, customer relationship management, financial and supply chain. And its Profitability Management for Financial Services combines a number of industry-specific engines to create an integrated suite of analytics for banks and other lending institutions.

Analytical applications within mySAP Business Intelligence also integrate business processes; its business area-based applications include customer relationship analytics, enterprise analytics, supply chain analytics and marketplace analytics. **SD**

Service Process Optimization Solutions (SPO) for the Service Economy

Few service organizations possess an enterprise-wide solution capable of optimizing the selection of projects and people and automating service delivery. For all service organizations serving either internal or external customers, speed and quality of service delivery have always been the keys to success. However, the environment within the service economy is becoming increasingly complex.

Today, the most successful service organizations recognize the critical importance of obtaining visibility into future engagements in order to facilitate better workforce design and planning. They also understand the immense opportunity cost of placing an ill-fitted resource on a sub-optimal project given the multitude of opportunities available.

Maximize, Enhance, Improve, Increase

Novient is the premier software provider of Internet-based Service Process Optimization solutions (SPO) for the service economy. Through operations planning and improved workforce design, scheduling and management, Novient's customers maximize project revenue, enhance project efficiency, improve employee retention and increase customer satisfaction.

Novient's SPO solution is comprised of two offerings: Novient eSer-

vices™ and Novient iServerNet™. Novient eServices is the leading software application for service process optimization. Novient eServices enables an organization to gain visibility into future service projects, optimally match available people and skills to project requirements, and automate the service delivery process. Optimization occurs across all business dimensions, including speed, project revenue and overall profitability.

Novient iServerNet is a patent-pending Internet collaboration infrastructure based on peer-to-peer architecture. By connecting an organization's internal people with its business partners, independent contractors and customers, regardless of their function or geographic location, Novient iServerNet enables an organization to optimally design and assemble a virtual service community.

Novient's solution is licensed to more than 130,000 users in 48 countries. The company's global customers include Accenture, American Electric Power, Ariba, Compaq, Computer Sciences Corp., Hyperion Solutions, Lawson Software, Mellon Financial, Nortel Networks, SAP and Siemens.

For more information about Novient, visit www.novient.com.

When it's Time to Share

"Organizations must get better at collaboration."

So says David Yockelson, senior vice president and director of electronic business strategies at the Meta Group. And, he suggests, "make the process of sharing knowledge simple. Use carrots or sticks to ensure that the job gets done. If the value proposition of doing this is not made clear, it will not get done."

Key Internet-driven collaboration technologies can help too.

Portals: A new user interface paradigm emerges

Long a staple of the mainstream Web surfing experience, portals are now being put to work in new ways, including access to corporate data, business applications and knowledge repositories.

Portals depend on their ability to pull together and integrate information from disparate sources and are built on several functionalities that together make a portal

greater than the sum of its parts when it comes to knowledge management, where they're being used to support collaboration and workflow automation.

Knowledge management (KM) portals deliver a customizable, multidimensional interface that offers searchable access to data, applications and colleagues. They can include not only content management tools—such as search and retrieval, an ability to access electronic news and information, and a repository for documents, websites and databases—but also collaboration and group productivity tools.

Lotus' Discovery Server includes a knowledge portal to manage personal and community information and activity as well as tools for user profiling and expertise location, and content tracking and analysis. Woolamai's portal offers both Internet and wireless functionality.

"For some organizations," says Yockelson, "KM means collecting, managing and disseminating best practices. For others, it means a focus on data warehousing and/or data mining to divine customer trends; for others, it could mean a focus on enterprise document management. This is only a small sample of choices. The underlying technology choices depend on the business processes and requirements that are the targets for KM. One technical element is quickly becoming a certainty, however: the enterprise portal is the chosen delivery framework for knowledge management endeavors."

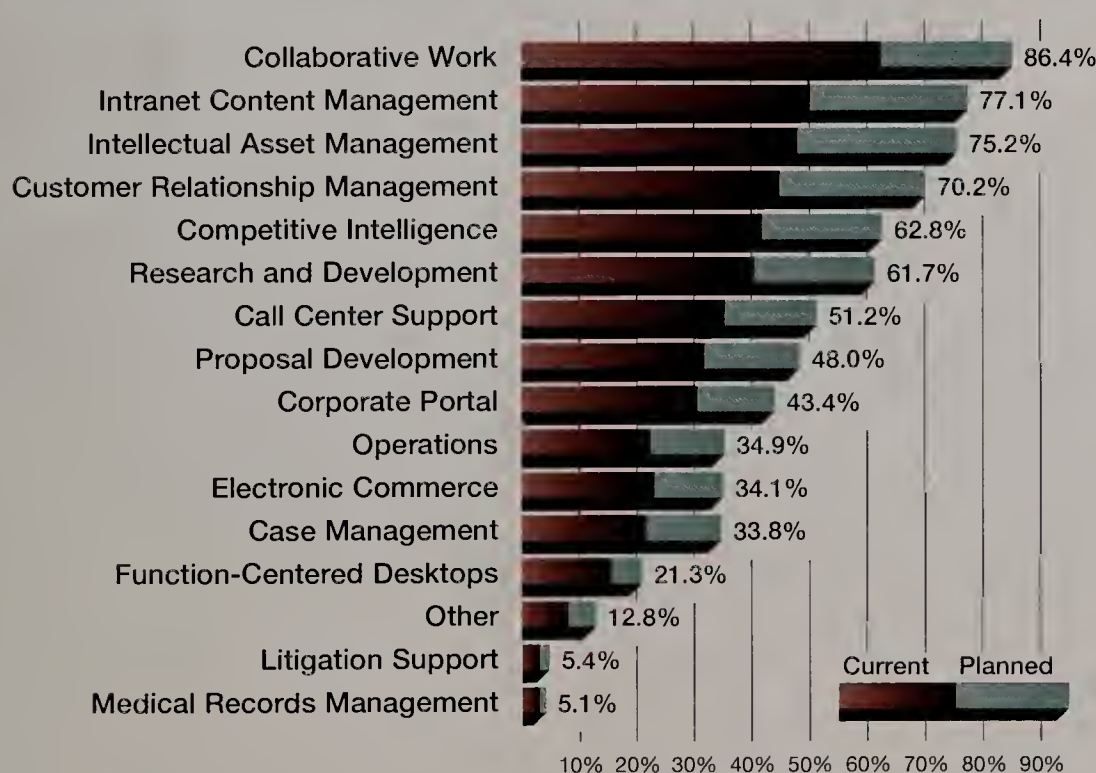
For instance, Procter & Gamble is using the Plumtree Corporate Portal to bring together content from one million webpages and thousands of Lotus Notes databases in an enterprise-wide knowledge base, creating one view of a business with hundreds of organizational units worldwide.

In addition to organizing access to documents in an enterprisewide Web directory, Plumtree's portal integrates information and services from other systems as Plumtree Portal Gadgets. Plumtree says that Gadgets, which look like the sports scoreboards or stock portfolios on consumer portals, represent the 5 percent of an application that serves the needs of 95 percent of its users. Procter & Gamble uses Gadgets to integrate a range of enterprise applications into its portal, including services from the company's SAP R/3 enterprise resource planning system, Oracle data warehousing and business intelligence applications, and E.piphany's E4 analytic customer relationship management system.

Personal touch

Personalization becomes essential if a portal is to deliver knowledge rather than use-

Working Applications of Knowledge Management



Source: Copyright © The Delphi Group

Percentage of Respondents

less data to users. There are two ways to personalize a portal: voluntary, which empowers users to choose the information they want to see, and involuntary, wherein the system behind the portal determines what the user sees (examples abound on B2C e-commerce websites) and is useful as a means to introduce users to information they may not know about.

"Basically, the portal must figure out what is contextually relevant to someone," says the Meta Group's Yockelson. "It can do this using one or more of several mechanisms: profile creation; indexing/text mining/auto-categorization; role management/access control; ongoing

data, calendaring, scheduling—to help them work together.

Personalization software—like that used on e-commerce sites—makes educated guesses about employees' capabilities and interests, enabling companies to quickly enlist those with the right skills and knowledge to participate in particular projects.

Coming soon: electronic employee profiles that can be automatically matched to evolving corporate needs.

Seek and ye shall find

At the heart of public Web portal success are search and navigation capabilities that

structured knowledge techniques—help reduce the amount of irrelevant information that organizations must cope with.

Using integrated search tools, for instance, organizations can catalog data from financial, HR and accounting applications into a single repository, which enables searches against file systems, database and Web data with a single query. Portals such as Microsoft's Digital Dashboard can consolidate views of data from heterogeneous sources to simplify navigation.

"Natural language techniques use dictionaries, thesauri, taxonomies and semantic nets to identify the relationships between terms and concepts," explains Jackie Fenn, Gartner vice president and research fellow, in a recent research note.

Sernio uses natural language processing techniques to index texts against predefined taxonomies.

P2P

Peer-to-peer collaboration technologies offer new ways to manage knowledge. Novient's iServerNet, an Internet collaboration infrastructure based on P2P architecture, connects organizations' internal people with its business partners, independent contractors, and customers, regardless of their function or geographic location—giving businesses the means to design and assemble a virtual service community.

Meanwhile, Novient's eServices software optimizes an organization's service processes by matching available people and skills to project requirements and automating the service delivery process.

"If faster time-to-market is to be a realistic proposition for competitive businesses, then new knowledge of market conditions, customer needs and internal capabilities and capacities must be generated in real-time," says Russell Caldwell, founder and chief technology officer at Novient. "All activities in the organization, especially knowledge capture and dissemination, must be optimized both technologically and organizationally." **SD**

Intersecting KM & E-Learning

A study conducted by the Cranfield School of Management and Microsoft profiled organizations with best-in-class knowledge management practices. The conclusion: rich-content that merges multiple channels and integrates text, audio and video to support capture and use of personalized, highly contextual knowledge is more effective than lean content that's chiefly focused on data and information.

Technologies enabling creation of this kind of rich content, such as voice recognition and video conferencing, can permit companies to digitally replace much of face-to-face interaction and conduct more thorough data collection as well as lessen the likelihood of misinterpretation.

"Often there are processes that require pictures, or perhaps video and audio, to enable novices to 'experience' something," points out David Yockelson, senior vice president and director of electronic business strategies at the Meta Group. "Some processes, products and so on demand a combination of video/audio and presentation instruction, and this form of delivery can also enable 'anytime' learning and delivery of expertise. Ultimately, an intersection of knowledge management and e-learning focused on collection and dissemination of best practices—often with multimedia content and delivery mechanisms—will provide greater benefits than either capability alone."

analysis of information usage (to help figure out what a user is likely to want more of); and human feedback about information and source accuracy/quality. Often, more than one of these mechanisms is at work."

Some companies are using search engines and profiling techniques to do affinity matching: finding people with similar interests and needs in an organization. What's more, these people can be put together with other corporate knowledge—documents, applications, customer

present, as Yockelson of the Meta Group says, "the most accurate and contextually relevant information without the human effort (cost) of sifting through the information sources manually."

It's a capability that's just as key for e-commerce and intra-corporate portals—and knowledge portals.

Advancements in search engine technology—such as text query across multiple platforms, quality-based filtering (used by Web portals like Google and Direct Hit), natural language processing and

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New Ways to Learn

Too often, knowledge is temporary, its value eroding as time passes. Organizations have less and less time to benefit from "getting smart."

Anyone who needs know-how to do their job has to be educated, trained and retrained to keep doing their job well. But, as David James Clarke, founder and vice president of development at Logilient Learning Systems, points out, "Corporations that deploy traditional classroom-based learning methods pay travel expenses, venue and trainer fees, and face loss in employee productivity during training cycles."

Beyond e-reading

According to the American Society of Training and Development, people do better at learning when they use more of their senses (sight, hearing and activity).

That's why classroom training is so effective. But it's also expensive and time-consuming; instructor-led training is associated with high-fixed costs and a lack of flexibility. But classic computer-based training (CBT), while less costly and more flexible, is also much more boring and

ineffective—perhaps because CBT essentially delivers textual materials.

Because it engages such a narrow range of human sense perception, CBT doesn't encourage learning or the retention of important knowledge.

Just in time and just enough

Once more, the Internet has come to the rescue, this time with e-learning—an Internet-delivered just-in-time approach to education and training that's quickly gaining converts because of its 24/7 flexibility, cost-effectiveness and rapid deployment capability. One company estimates that its e-learning costs 75 percent less than traditional classroom training.

"E-learning," says Clarke, "eliminates [traditional learning] expenses and delivers targeted learning programs to employees at work or home. E-learning and online certification empowers the enterprise with skilled personnel, and, by using the power of the Internet, is the lowest-

costing and most efficient medium for ongoing training efforts."

E-learning has moved training to any Web browser and delivers it in self-paced (asynchronous) formats or as virtual classes accessed through use of synchronous e-learning tools. E-learning technologies—including chat rooms, synchronous meeting tools and threaded discussion groups—allow learning to be automatically tailored according to initial assessments of students' needs and abilities.

E-learning companies such as Logilient, which offers Web-enabled IT training, are challenging the superiority of instructor-led training—and not just on a cost basis either. According to a recent Logilient study, instructor-led training (ILT) expenses are approximately 30 percent more than Logilient's e-learning program. As important, compared to leading ILT companies' students, Logilient students spend approximately 60 percent less time in Logilient's Web-enabled training courses.

Learning objects: short & sweet

E-learning providers are discovering that one of the best ways to maximize learning is to offer it up in small, digestible quantities at exactly the right time. These are learning objects, just in time and just enough.

Learning objects are reuseable and enable more personalized training and will encourage a trend away from e-learning sessions to shorter interventions that address narrower, more specific needs. As industry standards for learning objects are developed, it'll be possible to design e-learning for individuals by integrating appropriate objects adapted to a person's expertise, learning style and speed.

XML—the Extensible Markup Language apparently destined to replace HTML as the standard Web authoring language—also has a role to play in e-learning because its metadata capabilities can be used to label learning content. XML is already being used to customize content on-the-fly.

Expect tools like databases of text-mined documents that can be keyword-searched to be combined with modularly-stored learning content as well as other knowledge resources and served to users from a single knowledge repository.

Killer app

Sean Maloney, executive vice president of Intel Corp., recently called e-learning "the killer application over the next two to three years," and said he thinks more than half of IT training is being done remotely.

"The American Society for Training & Development (ASTD) recently found that public companies investing \$680 or more in training per employee improved their total stockholder return the following year by several percentage points," notes Tom Graunke, CEO and founder of KnowledgeNet.

For KnowledgeNet customer Cisco Systems, migrating to an e-learning training strategy has helped deliver new

product training to its worldwide channel partners in weeks instead of months. This fast time-to-market has translated into increased productivity, customer loyalty and revenue for the Internet networking giant.

A survey of KnowledgeNet student performance by CMP Media certified that 94 percent passed their certification exams and that 85 percent who had taken both traditional instructor-led and e-learning formats earned the same or higher score with their e-learning training.

CVS pharmacy reports that after implementing a structured training program using THINQ TrainingServer Learning Management System (LMS), its technicians currently have a 97 percent pass rate for the national Pharmacy Technician Certification Board (PTCB) exam, compared to a national average pass rate of 81 percent.

"The bottom line," concludes Graunke, "is that corporations can train their employees more effectively and more consistently in half the time for half the money."

From the Web up

But not all e-learning vendors are really Web-ready. Many are tied to legacy technologies and courseware, and some require students to download browser plug-ins to view content. Some "shovel" old courses, articles and other materials and a simple self-grading test onto the Web and call it e-learning. In fact, it's CBT-ware: boring and ineffective.

Newer training providers committed to advanced e-learning capabilities have constructed new training content that combines the intensity and effectiveness of the classroom with the cost-effectiveness and convenience of technology-delivered training.

The payoff can be impressive. EMC anticipates that savings realized using KnowledgeNet's Monsoon e-learning platform for its new e-Proven certification program could eventually cut its delivery costs by as much as 50 percent. Built Internet-aware from the ground up,

Needed: Support for Discovery Process

Started in 1995, HighWire Press, Stanford University Library's Internet-publishing group, today produces more than 6,000 pages each week in scientific, medical and academic journals. *Science Magazine*, one of the magazines in its inventory, is one of the most highly cited magazines in the world.

To organize and provide easy access to articles in the more than 254 online journals HighWire Press produces for the journal's publishers, the group, says Associate Publisher and Director John Sack, has been using Semio Tagger.

The Press had first implemented the Verity search engine, which was, observes Sack, very useful for keyword searches.

"This helped researchers who knew precisely what they were looking for," he says. "But we needed to support a discovery process as well—to help those researchers who didn't know exactly what they were looking for. These people needed to review related materials from a variety of disciplines to seek and identify possible correlations. We also needed an automated way of categorizing these articles, something that would identify concepts and link them in a logical, browseable hierarchy. Some organizations could do this manually, but we have almost a million articles online with several hundred more coming in every day."

Stanford's HighWire Press installed Semio to help classify these articles and create the taxonomies—sets of relationships that have distinct meanings to users—needed for discovery searches. Sack adds that HighWire augmented the automatic classification done by the Semio technology.

Customized Categorization Process

"The automatic processing came close, but we needed to add some different categories and terms that were unique to us," he explains. "So we came up with the topics, described the rules and then used Semio to auto examine the new documents and put them in the right categories. We appreciated the ability to customize the categorization process."

Today, through Semio Tagger, Stanford's HighWire Press offers advanced searching, links to related research images and multimedia, and immediate dissemination of newly accepted research to research and academic communities.

For more information, visit Semio at www.semio.com.

Monsoon enables integrated e-learning solutions in multiple Internet-based formats, including synchronous (live) and asynchronous (self-paced), as well as mobile e-learning available on handheld devices.

Blended solutions

"Typically, complex processes must still be taught or learned via traditional methods—in-person training and repetition," notes David Yockelson, senior vice president and director of electronic business strategies at the Meta Group.

"That doesn't mean that they can't be augmented by video or by interactive learning tools," he adds. "It means that often, they can't be taught online. A combination might be the delivery of com-

bined audio/video/presentation of new information—for example, about new products or services—that combine the human element and expertise with the efficiencies and reusability of rich media."

After enlisting KnowledgeNet to launch a pilot blended learning program, Cisco Systems concluded that, compared to a classroom-based approach, cost savings were \$4,000 per student.

In real-time

Of course, those who need to learn are beginning to expect and demand more interaction, better graphics and a generally more engaging learning experience.

To meet those expectations, e-learning providers will have to construct an e-learning experience that can be person-

Prescriptive Approach to Learning Determines Pre-Existing Skills

Logilent's unique, blended learning methodology, the Synergy Learning System (SLS), is prescriptive-based and is built on a student-centric model that tailors itself to an individual's needs and skill sets. This prescriptive approach to learning pre-assesses students prior to beginning course work to determine pre-existing skills. Upon completion of each course, students are given a post-lesson assessment to ensure the acquisition of new skills used on set objectives. The objectives that are not met are continually and immediately addressed with a revised learning path.

Student-Centric Model

SLS consists of the following four components:

- **Pre-Assessment**—Students are initially assessed to determine strengths and weaknesses at the granular objective level. This assessment allows Logilent to immediately develop a custom training course for each student, which results in faster learning and greater cost savings.
- **Personalized Lesson Plan**—Once the assessment is completed, students are presented with an objective-based, personalized lesson plan. This comprehensive roadmap consists of multisensory learning tools including books, videos, lecture notes, live product labs, interactive simulations, communities and instructor-led training over the Web.

- **Post-Assessment**—When training has concluded, students are evaluated again to determine whether or not they have mastered all the objectives contained in the lesson plan.
- **Skills Catalog**—The result of this process is a Skills Catalog, which indexes the objective-level skills each student has mastered during their interaction with the Synergy Learning System.

"Live Lab"—the Next Level of Interactive E-learning

At the core of the SLS, Logilent offers a variety of multisensory learning tools consisting of live product labs, mentoring/community, online lecture notes, CD-ROMs, videos, interactive simulations and study guides. Logilent offers real-time access with hand-on configuration of routers, switches, Microsoft Windows 2000 and NT environments, among other programs.

In order to create an authentic, real-world user experience, Logilent pioneered a proprietary "Live Lab" engine that elevates Logilent's approach to the next level of interactive e-learning. RouterLIVE utilizes Java technology and innovative programming to allow users to control and configure numerous network devices in a real network environment with client-server functionality. The system currently accommodates 50 simultaneous users.

For more information about Logilent, visit www.logilent.com.

alized, animated, full of relevant examples and delivered live by human instructors in real-time.

A student might access simulations and hands-on labs via the Web which can be repeated any time to aid knowledge retention and also engage in virtual interaction (raised hand, poll response, pace rating) and communication (e-mail, chat) between instructors and other students. In addition to assignments and quizzes, students would benefit from pre-assessment tests, progress reports and online mentoring, 24/7.

We may be closer than we think. Lotus' LearningSpace environment, for example, offers real-time, simultaneous access to content—audio and video, shared white boards, shared applications, electronic hand-raising, participant lists, private messages, chat functionality and more—to create a virtual classroom.

IBM Mindspan services used LearningSpace to help IBM's management development group develop a global, comprehensive management training program that has earned international awards for its e-learning excellence. Named Basic Blue,

the program delivers five times the content of previous new-manager programs and has reduced the cost per student per day from \$400 to \$135. In one year, the cost avoidance for 5,000 new managers totaled \$24.4 million.

What's more, reuse of learning templates by other IBM organizations has

resulted in substantial savings. Return on investment for IBM was calculated to be 57 to 1. As importantly, 99.9 percent of those asked responded that they felt the overall experience—the e-learning as well as the face-to-face labs—was "valuable," and 99.8 percent said they'd recommend the experience to others. **SD**

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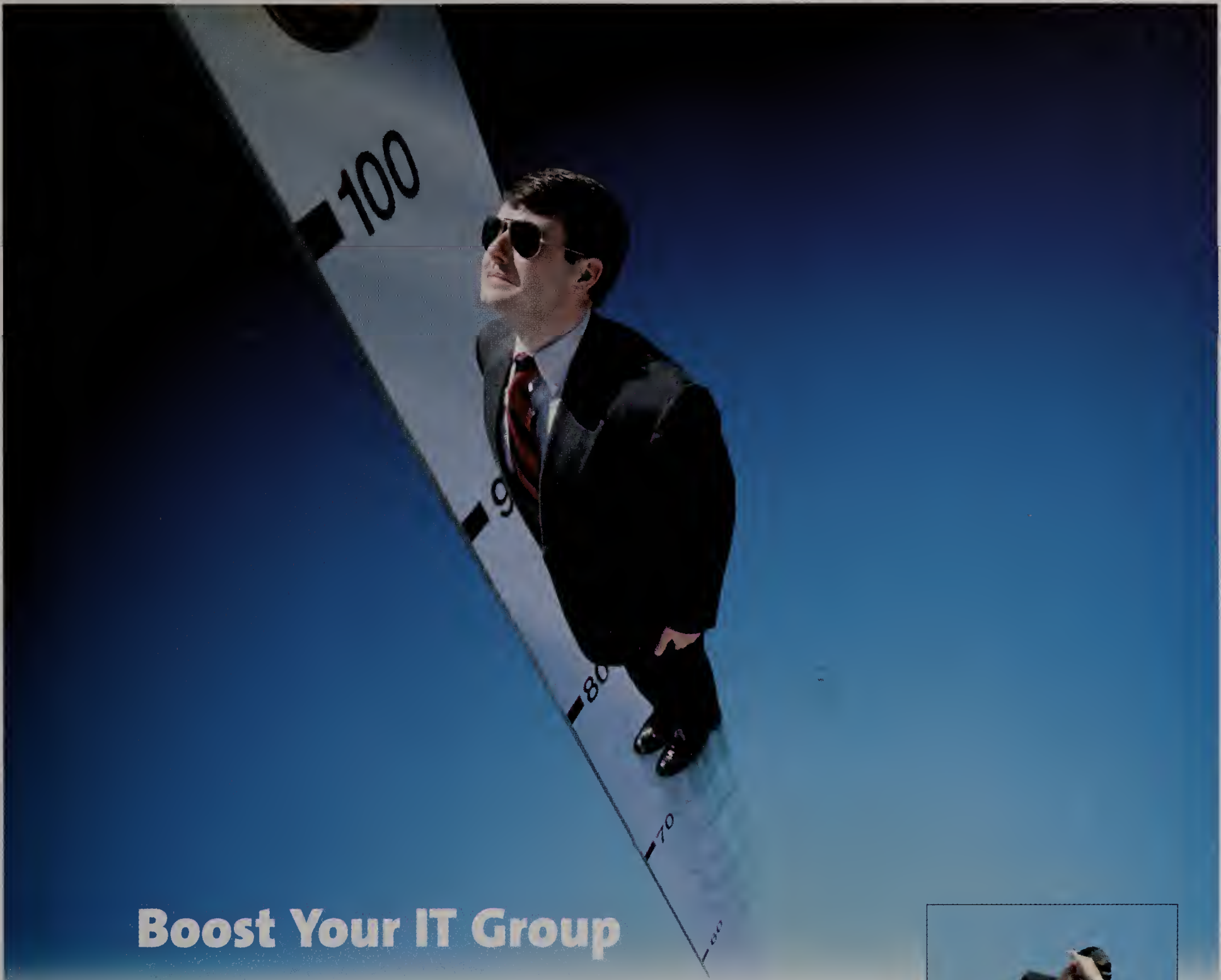
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HINDSIGHT | SCOTT SMITH

Not a Charity Case

THE IDEA OF DIRECTING I.T. for a charity group might evoke images of cash-strapped CIOs raiding thrift-store bins for Apple IIe parts. In fact, many nonprofits are making innovative use of Web-based technology to better link their organizations to donors, recipients and each other. The Boston-based United Way of Massachusetts Bay is one example. As its vice president of technology services, Scott

Smith is developing strategies that help the charity get and stretch new dollars.

CIO: Is a charity's budget prohibitive at all?

Smith: Although "not-for-profit" conjures up images of a technological backwater, we're very much a business. We have an obligation to shepherd donors' gifts wisely, but that's achieved in a number of ways. One is through the efficient

allocation of resources, which requires technology investments. As a not-for-profit, we can obtain state-of-the-art technology through favorable relationships with corporations and vendors. We choose not to be bleeding edge, so we make some modest compromises. But to accomplish our mission we need first-rate technology.

What are some innovations you've made?

Our Volunteer Solutions product helps local agencies connect volunteers with volunteer opportunities. People can build an online profile with skill sets,

geographical radius and whether they want one-time or ongoing opportunities. They're notified by e-mail when opportunities come up. Also, we're one of a handful of charities who have developed electronic pledging capabilities, which we're piloting in several workplaces. Within a few years, 50 percent of our 1,500 annual workplace campaigns will use e-pledging.

What are the advantages of e-pledging?

Less time spent distributing paper pledge forms, increased speed in getting pledges recorded. Web links can help prospective donors research how their gifts can be applied in the community. Also, there are interactive features to reach prospective Leadership donors (those giving \$1,000 a year). Say someone makes a pledge that will add up to \$800 a year. A screen comes up that says, "Do you realize for another X dollars a week you can move on up to Leadership level," and then tells them what additional impact their gift will have.

What role does your nonprofit mission play in recruiting?

We don't have the luxury of paying at the top end of the salary scale, but we regularly review salary structures to make sure we're competitive. Also, we have very humane working hours. But I do feel a special obligation when recruiting to help people see how their work will contribute to the United Way's goals.

—David T. Gordon

Scott Smith, United Way of Massachusetts Bay VP of technology services, achieves his nonprofit mission with first-rate technology.





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ARCHITECTS OF AN INTERNET WORLD

Everything in One Place

FRUSTRATED AT THE TIME YOU WASTE seeking some needle of information in your haystack of a desktop? Welcome to the human race, says industrial-organizational Psychologist Jeffrey Stanton. "The human being is a limited-bandwidth processor," says

Stanton, an assistant professor at Bowling Green State University's Doctoral Program in Industrial-Organizational Psychology in Bowling Green, Ohio. "A number of studies suggest that people are overwhelmed by the amount of information coming across their desktops. So there is a clear need for tools that can present what we need in an intelligent way."

Franklin Covey, renowned for its day planners and time-management training, may have that tool. FranklinCovey OnePlace, developed with Pasadena, Calif.-based Enfish Technology, enables users to organize all desktop information on a computer screen. Type a client's name in the find bar, for example, and OnePlace scans e-mail archives, your desktop folders, your company's intranet and the Internet, and retrieves everything related to that client. In one window with up to six panes, you can see all correspondence with and about

the client, contact numbers, spreadsheets, to-do lists, webpages and more.

That's just the kind of product David Tanner wants. Tanner, president and CEO of management consultancy ISO Health Care Group in Westport, Conn., expects OnePlace to be a big time-saver. "It's important to me to be able to have multiple windows open at once and in one place. I don't want to have all that layering on the desktop and have to search through all that," he says. "This eliminates a lot of jumping back and forth."



Happy Hours

Nowhere is the adage "time is money" truer than in a law firm, where efficiency is measured in billable hours. When Greenberg Traurig, which has 800 attorneys and lobbyists in 17 offices around the United States and one office in Brazil, sought a way to save time, it turned to videoconferencing. "To fly someplace for a one-hour meeting can cost you a whole day,"

says Jay Nogle, the firm's director of legal systems and IT point man. "An attorney on a plane can't interact with associates or clients, so there's a whole lot of lost productivity."

In January 2000, the firm tapped Portsmouth, N.H.-based Video Network Communications Inc. (VNCI) to install its PC-based, TV-quality system in conference and training rooms and on the desktops of managing partners. The VNCI product

provides real-time, 30-frames-per-second video—meaning that a wave of the hand doesn't look choppy onscreen—and is routed over existing copper phone lines, so there was no need to increase bandwidth. The typical installation cost for all clients is about \$2,500 to \$3,000 per end point, says VNCI Vice President of Sales and Marketing Stephen LaMarche.

The videoconferencing capabilities have been an instant hit;

schedules for the conference and training rooms fill up promptly. Many clients won't talk about certain matters on the phone, says Nogle. "If a litigation client in our Phoenix office needs to talk to our tax specialist in New York, they can have a videoconference in a matter of minutes without losing the sense of trust they get from seeing [their lawyer]. And in our business, it's all about trust." —D.G.

Plug the Time Sinks

As vice president of enterprise infrastructure services for Twentieth Century Fox in Los Angeles, Nader Karimi chafed as e-mails and meetings gobbled up huge chunks of his schedule. A year ago he instructed his 140-member staff to cut back on the "cc" and "FYI" e-mails they sent him. "I trust my management team to handle a lot of issues and to filter that information to me through their status reports," he says. Within a few months Karimi's inbox slimmed from 150 to 60 e-mails daily. He streamlined status reports to bulleted, one-page memos and cut weekly two-hour staff meetings to one hour. Those closest to his office get less meeting time because they already get more "water cooler" chat time with him. Karimi, who was recently promoted to vice president of emerging technology, also tried something truly revolutionary in the meeting—heavy movie biz: "I started saying no to meetings." —D.G.



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Douglas Pileri, IT vice president for Thomson Multimedia's e-business, believes improved communication between the two groups has boosted esprit de corps.

IT versus

How to end the war and profit

Reader ROI

- Discover how feuds between IT and marketing can harm your business
- Understand the sharp cultural differences between the two departments
- Learn how three companies managed to bring their IT and marketing people together

Tom Shelman feared the worst. Without consulting him, the marketing department at Northrop Grumman had struck a deal with a client that required Northrop's engineering department to upgrade its entire IT infrastructure—hardware, software and dozens of desktop workstations. Shelman, Northrop's CIO, knew that the company's bid for the job did not begin to cover the cost of



**Ken Greer, e-business
marketing manager
for Thomson Multimedia,
has learned not to make
unrealistic promises
that IT can't keep.**

Marketing

from a new relationship

BY LEE PENDER

those improvements. He also knew that his IT department didn't have the resources to honor the agreement. ■ "There was no way the rate could absorb that kind of investment," says Shelman, who still winces at the memory a few years later. "Nor did the company understand the kind of investment that was going to be required. Things like that are a multimillion-dollar investment." ■ Northrop would have lost serious

money on the contract if Shelman had not immediately notified the CFO of the financial bombshell in time for the company to salvage some profit from the deal. This wasn't the first time marketing had done an end run around the IT department. But this time, Shelman decided he had had enough: From that point on, he insisted on working with his marketing counterparts to make sure that marketing never again made IT promises the company couldn't keep.

Northrop learned the hard way how to bring its IT and marketing departments together. Throughout much of corporate America, however, marketing and IT departments still work in separate, non-communicating spheres, with opposing strategies and goals. Gung ho salespeople make deals that IT can't support. Marketing professionals want sexy new features installed on their companies' web-pages immediately. Companies lose deals because marketing's glossy image doesn't always accurately represent IT's back-end capabilities. And IT professionals don't always have the communication skills or clout in their company to withstand marketing's demands.

**Tom Shelman,
CIO of Northrop Grumman,
insists on working closely
with his marketing
counterparts.**



**Northrop Grumman learned the hard way how important
it was to bring **MARKETING AND I.T.** together, so
that one arm didn't make promises the other couldn't keep.**

As technology becomes more and more central to the operation of many companies, it is increasingly imperative that IT and marketing heal this longstanding rift. And don't expect the other party to do all the work. Understanding what makes your marketing colleagues tick is essential for any CIO.

Polar Opposites

The root of the problem is that CIOs and marketers have strikingly different job

mandates and personalities. Marketers think about opportunities: raking in revenue with new accounts, promising new and more exciting services, dreaming up bold new images for the company. CIOs, by contrast, constantly deal with limitations: a nagging lack of IT resources, financial barriers to implementation of new systems, the frequent need to sacrifice exciting new projects in order to keep legacy systems up and running.

"Marketing's charter is to go find new channels for sales," says Amber Niven, vice president of IT at Arch Communications, a provider of wireless communication systems based in Westborough, Mass. "They don't come to IT first and say, 'What are you capable of doing?' They more

often go to the customer and say, 'What do you want?'"

And CIOs, by necessity, are the first to ask, "What do you really need?" CIOs worry about whether a particular job can be accomplished, given the limitations of staffing and technology. Finding good IT professionals is still difficult, and software implementations are almost always expensive and time-consuming. Plus, any new technology project a CIO undertakes has to

be integrated into a company's current technology infrastructure—never an easy task. Where marketers see opportunity, CIOs see constraint.

"We are the IS department; we have to build with the known world," says Allan Ditchfield, former CIO at MCI. "The marketing guys don't give a rat's ass about those barriers."

Personality differences also come into play. CIOs tend to be more cautious and methodical than marketers, according to CIOs and those who work with them. They are always on the lookout for potential obstacles that might throw a monkey wrench into ambitious IT projects. Marketers are much more likely to throw caution to the wind; they think impulsively,

using potential roadblocks as reasons to get fired up about a project rather than rein it in.

"Sales and marketing guys love objections—they'll continue to fight until you light them on fire and throw them out the window," Ditchfield says.

As Ditchfield's sarcasm suggests, it wasn't easy for him, as CIO of MCI in the late 1980s, to learn how to play nice with marketing.

The MCI Wars

Today, the MCI Friends and Family calling plan is widely recognized as a marketing triumph. But it almost never got off the ground because of a feud between the company's IT and marketing departments. The idea for the calling plan, which sprang from the marketing department, was to set up a web of discounts for each customer who signed up a relative or friend for the MCI phone service—a fledgling David trying to

MCI's famous FRIENDS AND FAMILY calling plan almost never got off the ground because of a feud between IT and marketing.

Allan Ditchfield, former CIO of MCI, learned that marketing is not interested in hearing about technology's limitations.



take on AT&T's Goliath. According to marketing's plan, customer A could get a discount when calling customer B, and customer B could get a discount when calling customer C. In addition, customer A could get the same discount for calling customer C. But Ditchfield recoiled at the idea, fearing that his IT staff would not be able to adapt its architecture to accommodate the complicated algorithms and database needs the plan would require. He and his IT staff responded with a watered-down version of marketing's idea.

"We came back and said we could sort the top three to five customers and give them a discount for [calling each other]," he says.

Marketing replied, "Did you not hear us? It's a relationship chain."

Ditchfield now realizes that his initial reaction was wrong. But so was the marketers' counter-reaction—if IT couldn't build what marketing wanted, the company would find an outside consultant that could, thereby threatening the credibility of the IT department.

Ditchfield was the one who finally broke the impasse, gathering the best employees

in IT and marketing to meet and work out a plan. Deep down, he knew the Friends and Family plan held tremendous potential; it could, after all, be MCI's first real chance to break competitor AT&T's dominance in the residential calling market.

And sure enough, seated together in the same room, the IT and marketing professionals began to compromise. IT discarded the notion that marketing's relationship chain idea would be impossible to implement. The marketers came to realize that they would have to sacrifice some of the extra features they wanted, such as the number of people who could be included in a discount chain. When the multidisciplinary group began to hash out details of the plan, harmony won out over discord. Infected by marketing's enthusiasm, the IT staff even became excited by the challenge of such a groundbreaking project. From then on, Ditchfield says, things went more smoothly.

"It really appealed to the primal lust that systems people have," Ditchfield recalls. "It was that type of breakthrough that we needed."

What Ditchfield learned during this

IT professionals at Arch Communications now accompany salespeople to "pitch" meetings with new customers, so they are PART OF THE LOOP from the get-go.

exercise was the value of bringing IT and marketing employees to the same table and how important it was for IT to speak the marketers' language. He discovered that when he and his IT staff talked in terms of the impact that excessive demands for new technology might have on the bottom line, the marketing department listened. Instead of saying that IT didn't have the servers to support a project, Ditchfield learned to say that the project would be too expensive and

would hurt the company's profitability.

"We used to explain [technology] to the point of pain," he adds. In the Friends and Family campaign, he and his IT staff learned to talk about sales first and software second. "You have to stay at the business level with [marketers] most of the time," he says. "Once I became more of a business person, I could go to my people and say, 'I don't want to hear about architecture [when dealing with marketing].'"

**Amber Niven,
vice president of IT for Arch
Communications, understands
that IT and marketing have
very different mandates.**



Marketing's Partner

Misunderstandings between IT and marketing not only threaten major deals and revenue campaigns, as Northrop and MCI discovered, but can throw a monkey wrench into everyday business operations. Recently, for example, an important customer of Arch Communications'

requested a change in the way the pager company was totaling customers' bills. Marketing immediately agreed to the request. But the change required Niven's IT team to move the customer's data from an AS/400-based legacy system that couldn't handle the new billing process to a PC-based system that could.

Niven's team is getting the work done, but it's not easy; the complex project has put a strain on Arch's developers, many of whom are also involved in a separate

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initiative aimed at moving away from the company's legacy billing system.

"The large customers want customization," says Niven, who oversees the IT team from her office in Jackson, Miss. "It impacts the developers' day-to-day work—they have to juggle projects around. Something has to give somewhere."

Niven knew that she needed to honor that particular customer's request or risk losing it in a competitive environment. She handled the extra workload by reaching outside her company. While her in-house team handled the customer's billing request, she brought in consultants to help complete other time-pressured assignments. Indeed, reaching out to consultants is one way for IT departments to ease the pain of

unrealistic marketing demands. But ultimately it is not the best solution. Outsourcing, on an even basis, has its pitfalls.

"It has to be positioned very well with the staff," Niven says. "If you bring consultants in to do the nifty new stuff, and the [in-house] staff only gets to support a legacy billing system, that's not very popular."

The key to avoiding future mishaps, Niven concludes, is to make sure IT is involved in the decision-making process. IT profes-

sionals at her organization now accompany salespeople to "pitch" meetings with prospective new customers. She calls the meetings information-gathering sessions; they help her department determine up front what resources will be necessary to support the new account.

Blowing Up the Walls

Going on sales calls with marketing gurus is one thing. Actually merging the two

After years of **STRAINED COMMUNICATION** between IT and marketing, Thomson Multimedia literally blew up some walls to bring them together.



Ken Greer, manager of e-business marketing for Thomson Multimedia, talks with members of the e-business IT staff.

staffs is a far more radical approach. But for Thomson Multimedia, the manufacturer of home entertainment products and parent company of RCA, it seems to have worked.

The blue and gray building that houses Thomson's Indianapolis facility sits like a box in a flat, industrial section of the city. Inside the building an open lobby and a wide spiral staircase showcase some of RCA's newest innovations in high-definition television and entertainment systems.

Two years ago, IT and marketing were housed in separate parts of this four-story building. But after years of strained communication between the two groups, Thomson literally blew up the walls. In what used to be a space reserved for private executive offices, the company installed a series of sun-filled cubicles, now adorned with sports logos from Big 10 universities. The space hums with the noise of ringing phones and urgent discussions—the sound of IT and marketing professionals working side by side.

"We literally blew up VP offices all down one wall, and the chairman's office was moved," says Ken Greer, Thomson's man-

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ager of e-business marketing, sales and trade management for the Americas. "We had a concept that originated in sales called a pod concept where you put people with different functions into a pod. When we pulled together our e-business team, we integrated them into the same type of pod concept."

Greer's primary responsibility is marketing, sales and trade management, but he sits near the company's B2C IT manager, who functions as its overall e-business

of what it is—but the intricacies are not what I'm looking for."

The close quarters proved successful for Thomson when the company launched the RCA eBook late last year. It began developing both the actual eBook technology and the marketing strategy at the same time in April 2000, with the goal of launching the product in September. Both Pileri and Greer credit the new IT-marketing alignment in large part for the successful launch.

aster, IT and marketing are required to stay in constant communication on new customer matters and current projects. But to make sure that happens, a marketing executive actually reports directly to CIO Shelman and indirectly to the vice president of business development.

Furthermore, Northrop's system mandates that any expenses that will affect the IT department must meet the approval of the IT executive in charge of the business

unit in question. This system helps IT leaders understand marketing's goals and prevents marketing from taking off with deals IT can't support. And the system appears to be working. External audits have found that Shelman's IT department operates at 35 percent of the budget at which it would have operated

without an IT-marketing accord.

Shelman is responsible for keeping Northrop Grumman's CEO up to date on how effectively the IT-marketing collaboration is working. In the past, he says, marketing and IT would compete for the CEO's ear on matters of scheduling and spending. Now, the CEO has bought into the need for alignment, and both IT and marketing heads have discovered that the best way to grab the CEO's attention is to share it. Shelman includes in his reports input from the marketing executives who report to him. Shelman believes the benefits of collaboration go far beyond the fact that marketing no longer plays fast and loose with IT's resources. The two departments' teamwork, he says, has led to more comprehensive and accurate sales pitches.

"Marketers are out winning business, and you want them to go win business," Shelman says. "At least we're viewed as being part of that team as opposed to a bottleneck." **CIO**

Are you a survivor of IT and marketing battles? Tell your war stories to Senior Writer Lee Pender at lpender@cio.com.

Both Northrop Grumman IT and marketing heads have discovered that the best way to grab the CEO's attention is TO SHARE IT.

manager and chief systems guru. "I get calls internally and from external partners asking, 'Can we do this?' I say, 'Just a second' and turn around [to consult with someone from IT]," Greer says.

The arrangement has helped Greer learn not to make promises to customers that IT can't uphold. He now understands how IT works and what IT can and cannot do. Sitting in the company of IT professionals has helped Greer find a balance between his marketer's impulse and an IT professional's sense of reality. Conversely, members of Thomson's IT staff have learned to speak marketing's language. And Douglas Pileri, Thomson's vice president of e-business worldwide, says improved communication between the two groups has boosted esprit de corps.

"From an emotional standpoint, there's that single rallying point that says, 'Let's get on with [a project] and make it happen,'" Pileri says.

Greer, for his part, has welcomed the more direct, bottom-line messages he now hears from IT. "I'm not here to learn the intricacies of the technology," Greer says. "I need to have a good firm understanding

Greer's and Pileri's employees, for instance, joined forces to create a CRM application that collected the names of customers who wanted to order eBooks over the Web and automatically e-mailed them dates for the product's availability, shipping the product to them as soon as it was available. The CRM effort was critical to eBook's early sales. In the fourth quarter of 2000, the first quarter in which they were available, eBooks accounted for 50 percent of the sales on RCA's website.

Sharing the CEO's Ear

Space is one way to bring IT and marketing together. Another way is to set up cross-disciplinary teams that work closely together and evaluate new and existing customer accounts. As a result of Northrop's close encounter with a contract dis-

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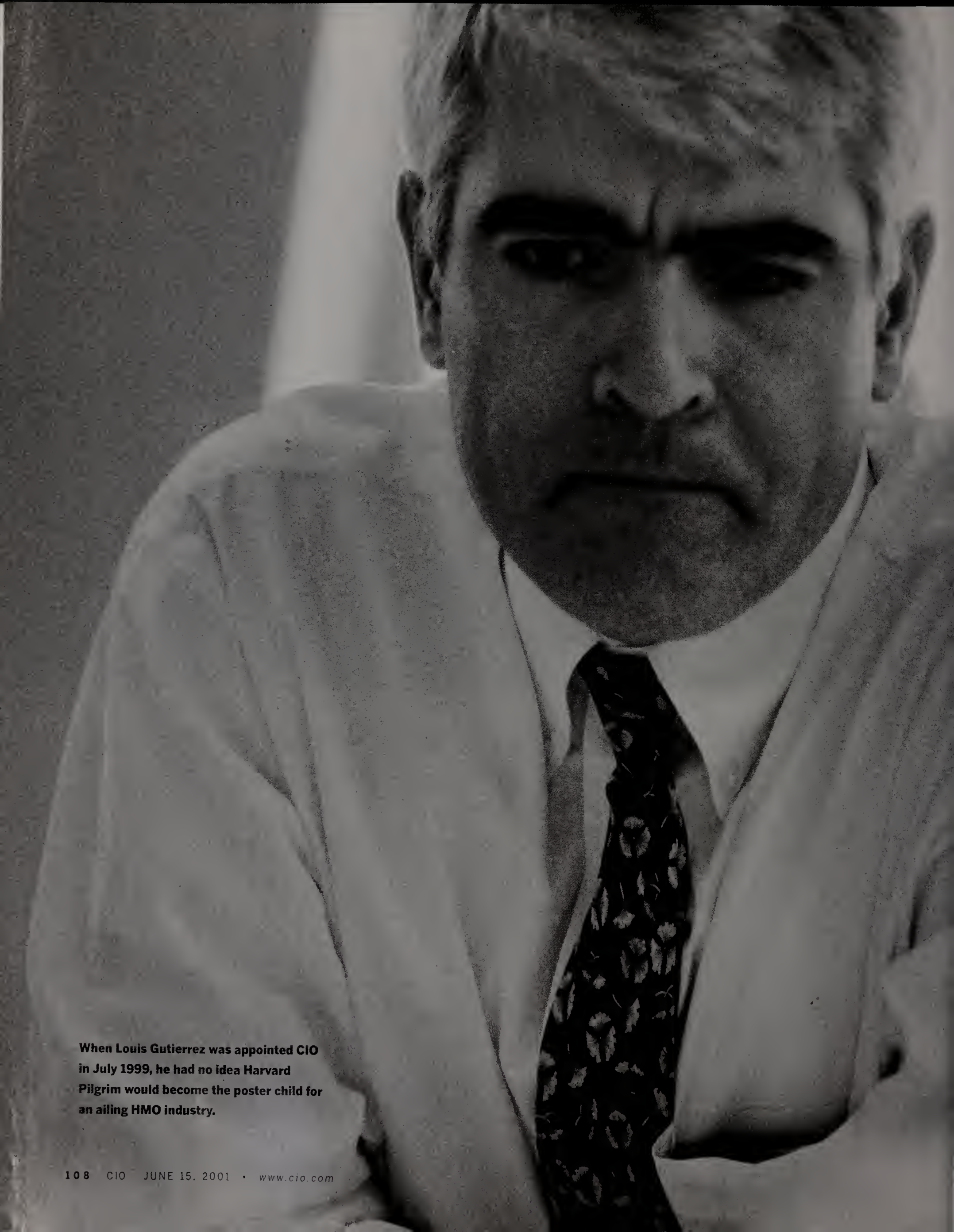
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When Louis Gutierrez was appointed CIO in July 1999, he had no idea Harvard Pilgrim would become the poster child for an ailing HMO industry.

Blood, Sweat and Systems Integration

When Harvard Pilgrim Health Care's new CIO came on board, the HMO was fading fast. It's out of the ICU now, but no one's talking turnaround—yet.

BY ANGELA GENUSA

Reader ROI

- ▶ Follow one CIO who navigated the shoals of a financially troubled HMO
- ▶ Discover how he arrived at the decision to outsource most of the company's IT
- ▶ Learn why the HMO industry is in such a precarious state

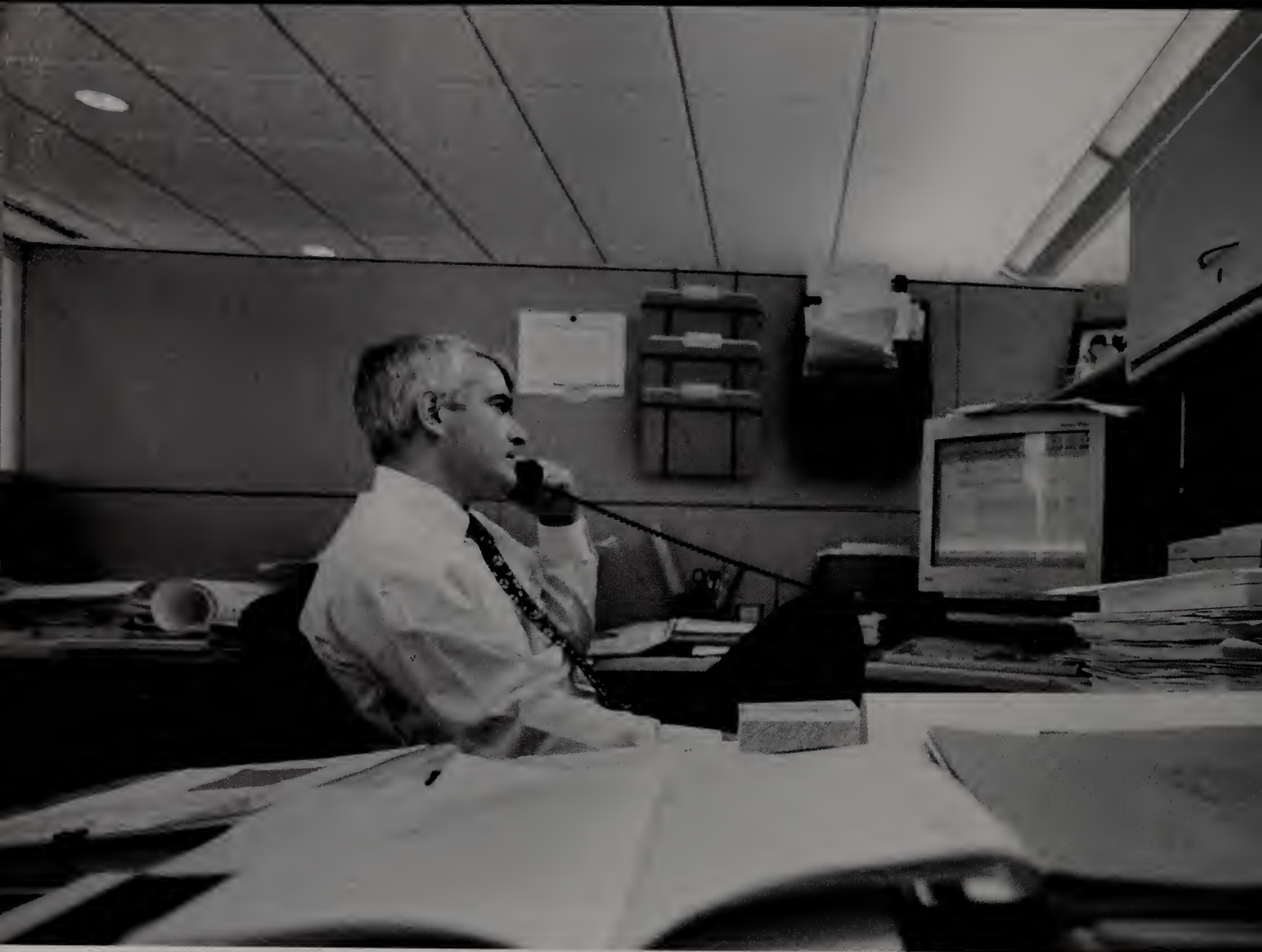
Louis Gutierrez couldn't imagine who in the world would be calling him at work at 8:30 in the evening.

Most of the other Federal Reserve Bank employees in Boston had long since gone home on this March evening, and the building was silent and dark but for the light in his office.

Gutierrez answered his phone and immediately recognized Charlie Baker's voice on the other end. For three years as CIO of the Commonwealth of Massachusetts, Gutierrez had reported to Baker, who was the state's former secretary for administration and finance. "I've been asked to take over as the chief executive officer at Harvard Pilgrim Health Care," Baker said. Gutierrez congratulated his former boss, but as Baker continued, Gutierrez began to realize that this wasn't simply a "Here's where I'll be, let's keep in touch" kind of phone call. Baker gave Gutierrez a brief rundown on the situation at Brookline, Mass.-based Harvard Pilgrim, New England's oldest and most prestigious nonprofit health maintenance organization. It was bad. Things at the health-care plan were seriously amiss.

Then Baker got down to the business at hand. "I'd like you to come join me," he said. Gutierrez was stunned.

He had become deputy director of Federal Reserve Information Technology at the Federal Reserve Bank just six months ago, after nearly 20 years of working his way up the IT career ladder—from programming and systems analyst positions at IBM in the early 1980s



to CIO of the Commonwealth of Massachusetts in 1996. He'd gone back to school in 1990 and earned a master's of science in management, specializing in information technology and finance at MIT's Sloan School of Management. Now 40, why would he even consider leaving the Federal Reserve?

"This could be scary," Baker had said, and to Gutierrez that sounded like an irresistible challenge from a boss for whom he had loved working.

Gutierrez said he'd think about the offer. Baker said he would keep him posted "as the situation unfolds."

All Hands on Deck

THE SITUATION at Harvard Pilgrim continued to unfold. And unfold. In follow-up late-night phone calls, Baker filled

Gutierrez in. Incorrect estimates had been made in the HMO's revenue projections, in large part because of how revenue and claims accounting were being handled—or rather mishandled. During one of these calls, Gutierrez accepted Baker's offer.

"Although my stomach was kind of roiling, I knew that that's what I wanted," Gutierrez says. "Regardless of my ambition [at the Federal Reserve Bank], I really did want to rejoin Charlie in some endeavor."

Then the storm struck. In April 1999, Harvard Pilgrim reported an unprecedented and devastating \$54 million net loss and an operating loss of \$94 million for the previous year. The news hit the papers, and shortly afterward, CEO Allen Greenberg and CFO Thomas Brophy resigned. Baker stepped in as CEO on May 24, 1999. He brought in Bruce Bullen as COO and Eileen

Winterble as the new CFO. CIO Debra Speight soon resigned. Gutierrez tied up loose ends at the Federal Reserve and joined Harvard Pilgrim in July. Baker also hired turnaround consultants from Time Zero, a Cambridge, Mass.-based division of Perot Systems, a Texas consulting and outsourcing company owned by former presidential candidate H. Ross Perot.

Gutierrez and the rest of the new senior management team hit the ground running, working almost around the clock, seven days a week, to save the sinking HMO. The small group of senior officers formed a turnaround steering committee, chaired by Bullen, and held intense, late-night planning sessions twice a week. Several significant decisions emerged from these sessions, including one to renegotiate contracts with physician groups to obtain better rates.

As senior executives worked feverishly to turn the HMO around, Gutierrez was on the phone putting out fires from dawn to dusk.

Harvard Pilgrim did not integrate the two health plans' claims and enrollment systems. For the next 11 years, the HMO continued to acquire smaller regional health plans, including Rhode Island Group Health Association and Neighborhood Health Plan, and also expanded into the Maine market. In its largest merger with Pilgrim Health Care in 1995, Harvard Pilgrim gained 350,000 new members. But because senior executives failed to appreciate the importance of IT, Harvard Pilgrim never fully integrated all of the different systems.

So Gutierrez inherited a gargantuan mess of more than 55 separate core application systems, including four claims processing systems that left the HMO incapable of tracking claims or setting accurate premiums. "When corporations neglect to fully mop up after each merger, it leaves a tangled mess in the hands of whomever comes afterward, with duplicative systems that aren't feeding well into consolidated financials and a degraded operational capability," Gutierrez says.

Even so, he had no idea just how wild the roller-coaster ride during the next two years would be. His assignment would involve not only taking over IT but also claims processing. And he would be responsible for overseeing the outsourcing of both functions, a

Pilgrim would become the poster child for the ills of the entire HMO industry.

A Doctor on Board?

JUST A COUPLE OF DAYS into the job, Gutierrez received his first assignment from Baker: The new CIO needed to decide whether Harvard Pilgrim should outsource IT, claims processing, both or neither. Teamwork between these two departments was crucial to the survival of the HMO, yet finger-pointing and infighting were epidemic, Baker said. For instance, whenever claims got in trouble for the time it took to sort through provider claims that came in a second time, it blamed IT and vice versa.

Gutierrez had two weeks to make the decision. He was stunned at the tight time frame. "I cannot remember a time in my life when there was so little time to process," he recalls.

During the next two weeks, Gutierrez spent time with his new staff in both technical and claims operations, asking for their advice while simultaneously trying to keep operations afloat. Some board members who had gone through a similar outsourcing decision years before voiced concern. They were worried the outsourcing might be done too hastily without adequate attention paid to operational needs. "This could spell a lot of trouble," they said.

Even so, Gutierrez decided: Harvard Pilgrim would outsource both claims processing and the technology functions, which included data center operations, net-

The new management team blamed part of Harvard Pilgrim's woes on its mishmash of information systems, which had been cobbled together as the HMO gobbled up other health plans in mergers. Beginning in 1986, the HMO (then called Harvard

After a decade of piecemeal mergers, Gutierrez inherited a gargantuan mess of more than 55 separate core application systems.

Community Health Plan), which had 240,000 members, acquired MultiGroup, a regional New England HMO with 105,000 members. In a pattern that would continue,

massive project that would require him to give up his traditional CIO duties. When Gutierrez picked up Baker's gauntlet in July 1999, he also had no idea that Harvard

work infrastructure and programming. "We wanted a common accountability of IT and claims processing," he says. He also believed that the only way to transform the

Turnarounds

claims adjudication function was to change the way both the technology and employees worked, to make them a cohesive unit with common goals.

Perot Systems met many of the criteria Gutierrez believed he needed for the job and most important, it also had the largest number of Amisys specialists of any qualified competitor. This was important since Amisys was the HMO's primary operating software. Because there was no time to pre-

noon, over Chinese food, Baker signed the 10-year, \$700 million contract.

As a result, 826 claims processing and IS staff members would be outsourced, staying at their desks but becoming employees of Perot Systems rather than Harvard Pilgrim, effective Oct. 15. There were no layoffs related to the outsourcing transaction. "This was not some subterfuge for a bevy of pink slips," Gutierrez says. He decided to keep the 40 staff members in charge of data ware-

employee drug screenings, didn't go over well.

As the transition bumped along, Gutierrez and his staff still had to stay on top of routine IT operations and claims processing work. The new CIO was overwhelmed by the sheer magnitude of work. It reached the point where Gutierrez dreaded picking up his phone, which rang constantly. "Every day was a series of bonfires and some larger forest fires," he says. "Every phone call added something else, and it was like juggling a bunch of balls and a number of them were bound to fall. There was a sense of guilt, and I felt desperate to believe I was keeping the right balls in the air."

Keeping Harvard Pilgrim Afloat

BEFORE GUTIERREZ knew it, it was mid-October—only two months away from the Y2K deadline. Although Harvard Pilgrim's Y2K program, begun under former CIO Speight's leadership, was active and well-funded, it had some gaps—primarily in the Medicare remediation system—and there wasn't much time to plug the holes. November and December turned into a blur of frenetic work to meet the Dec. 31 deadline, including a couple of last-minute scares about whether the core claims processing engine would meet the criteria for Y2K compliance.

Then, in the early morning of Jan. 1, during the first few hours after the turn of the century, Gutierrez experienced what he calls a transcendent moment. Around 6 a.m., he called two of the Perot Systems management team consultants

and his deputy director for a status report and was told they were on the roof of the building. Puzzled, Gutierrez went up there. "At the moment of the sun rising on the new century, the three of them were out there up on the roof smoking cigars," he says. "It stays with me as one of the more beautiful moments of my career. It seemed



Harvard Pilgrim CEO Charlie Baker (top) gave Gutierrez two weeks to reach a major outsourcing decision.

Below, Gutierrez meets with Bob Spiegel of Akamai, a potential vendor.

pare an RFP, Gutierrez and his team decided to proceed immediately in negotiations with Perot Systems. "We locked ourselves in a conference room every day for as long as we could stand it," Gutierrez says.

At 2 a.m. on Saturday, Oct. 2, 1999, the team emerged with a handshake deal. "After this we drove our legal team to an all-night diner in Boston where we stood out as the stodgy business set amongst the avant-garde youth crowd in fishnet stockings," Gutierrez recalls. He saw the legal team off on a plane to New York and then drove the contract to Baker's house that morning. That after-



housing, e-commerce strategy, security policy and technology process reengineering under his direct control.

In the beginning, there was a clash between the very disciplined, almost military-style Perot Systems and the less institutionalized culture at Harvard Pilgrim. New requirements by Perot Systems, such as



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STRESSING PERFORMANCE



Although Harvard Pilgrim was taken out of receivership in June of last year, the health plan is still in the red.

as if a lot of things had gone right. The outsourcing was in place. We'd made the Y2K change with the new century. It was a new sunrise, a new millennium—a glorious moment.”

But the moment was brief.

Just days later, as the Harvard Pilgrim financial team was working to close the books for 1999 by reconciling results from two financial systems and evaluating a large claims inventory, it discovered additional losses of between \$60 million and \$70 million. All totaled, the HMO would report a \$227.4 million loss for 1999.

“The sky was falling in,” Gutierrez says. On Jan. 4, under the state's new insolvency law, the Massachusetts commissioner of insurance took action. The court placed Harvard Pilgrim into temporary receivership, which put the failing HMO under state control to reorganize it and prevent it from going bankrupt and protect payments to physicians and hospitals so that members' care and coverage would not be disrupted. The state

Gutierrez discusses the progress being made with Kenneth Erdelt of Perot Systems, which has taken over claims processing for the HMO.

attorney general's office set up a Harvard Pilgrim task force to examine the problems and analyze solutions. One of the members of the task force, Alan Sager, a professor of health services at the Boston University School of Public Health, who cowrote the report “How Can We Fix Harvard Pilgrim's Problems Without Making Ours Worse?” says that two factors caused Harvard Pilgrim's crisis: high costs and low revenues. Specifically, he cites revenue constraints from public and private employers, expensive

efforts to expand into adjacent New England states, and the cost of the Harvard-Pilgrim merger in 1995. The report also cited “bad management, self-sanctification and a measure of arrogance” on the part of top managers.

Nationally, Harvard Pilgrim wasn't the only HMO in bad shape—some 20 other health plans were placed in receivership or became insolvent in 1999.

Harvard Pilgrim senior management and consultants worked with the insurance commissioner to develop a turn-around strategy. Under the plan designed by Harvard Pilgrim's new leadership, the HMO would save an estimated \$70 million by closing down its Rhode Island affiliate, restructuring operations, reducing the workforce and

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continuing the effort to write new contracts with all Massachusetts physician groups. Gutierrez and Perot Systems set out to tackle the claims processing mess: four systems that routinely failed and crashed under the avalanche of transactions. The team eliminated all but one system, Amisys, upgraded it to a newer version to address scalability problems, and brought in a stronger hardware platform. Gutierrez says the Perot Systems

ledgers, along with cash management, project accounting, treasury, HR and payroll. However, the HMO still has more than 50 different unintegrated systems.

No Rest for the Weary

IN GUTIERREZ'S CUBICLE sits a large, red stop sign that says "Stop the Chaos." The seemingly unflappable CIO, however, appears to thrive on chaos. His only regret is

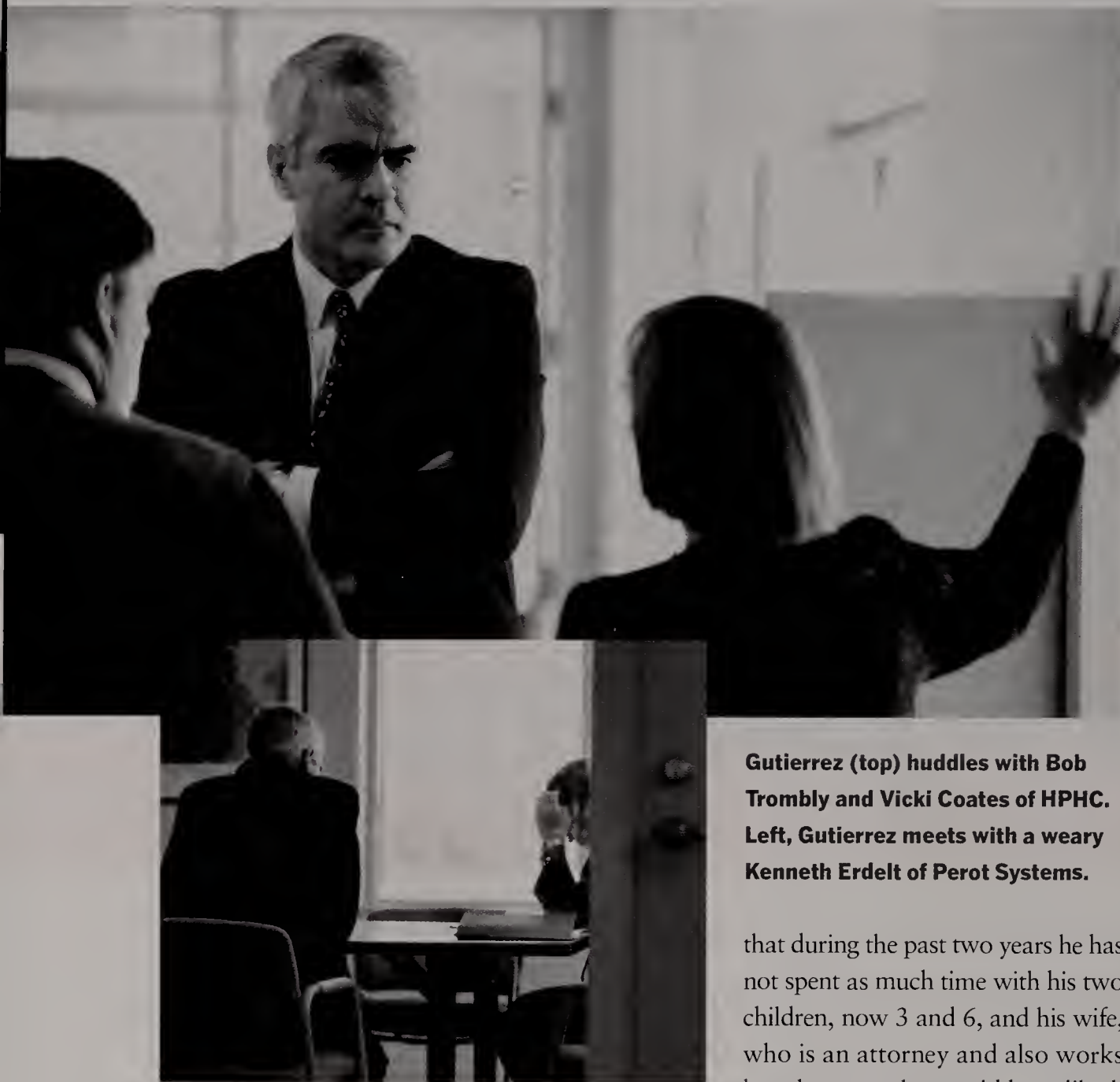
week's worth of claims), and turnaround time has improved.

New obstacles keep arising as the HMO struggles to turn around its financial problems. At press time, Harvard Pilgrim was in the midst of negotiations with Partners Health Care over the renewal of a long-term contract that could boost the HMO's payments to the multihospital system and its affiliated physicians by more than 25 percent over three years. The HMO has also seen a dramatic drop in membership, from 1 million members last year to 780,000 as of May 2001. Gutierrez is obsessed with ensuring that Harvard Pilgrim not only survives obstacles both old and new but also achieves positive financials during his tenure. In March 2001, he was named chief technology officer to increase his focus on IT and architecture issues, including data architecture.

When will he feel he has successfully accomplished the mission he accepted during that March phone call from Baker two years ago? "Personally, [if we can turn the health-care plan around] I will have been part of the team that successfully brought Harvard Pilgrim into positive financials by the end of 2001," he says. "As a corporation, we can't claim success without several years of these positive financials and positive reserves. History is going to ask, 'Did this new management team create a prolonged period of profitable operations for Harvard Pilgrim?'"

On Gutierrez's one-year anniversary last July, one of his colleagues praised the CIO, saying he is "the living example of the quotation that he takes all of the bricks thrown at him and builds a foundation." In spring 2002, when the final financials for Harvard Pilgrim for 2000 are announced and if the HMO is back in the black, Gutierrez will have cemented his already solid career foundation, brick by hard-won brick. **CIO**

How close have you come to near disaster in your job? Let Senior Editor Alison Bass know at abass@cio.com. Angela Genusa is a freelance writer living in Dallas. Editorial Assistant Joe Sullivan contributed additional reporting.



Gutierrez (top) huddles with Bob Trombly and Vicki Coates of HPHC. Left, Gutierrez meets with a weary Kenneth Erdelt of Perot Systems.

that during the past two years he has not spent as much time with his two children, now 3 and 6, and his wife, who is an attorney and also works long hours, as he would have liked.

Although Harvard Pilgrim was taken out of receivership in June of last year and its financial picture is rosier today, the health plan is still in the red. For 2000, it reported a net loss of \$9.7 million—a huge improvement over the \$227 million net loss it reported in 1999. Unprocessed claims have been reduced from more than 800,000 to under 175,000 (less than one

team's greatest contribution has been in the claims processing operation, where claims inventory has declined and significant improvements have been achieved in the time it takes to process and pay claims. Harvard Pilgrim achieved all of that without investing heavily in technology, Gutierrez says. The group also has been working to integrate accounting general



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BY SIMONE KAPLAN



American Axle & Manufacturing CIO Abdallah Shanti: "The challenge during a downturn is for IT to work on improving processes and automation. You have to make an investment during this time to prepare for an upswing."

Times



IN 1999 WHEN ABDALLAH SHANTI, CIO AT American Axle & Manufacturing, created a five-year strategic plan, his company was enjoying the same boom as everyone else. The Detroit-based manufacturer's earnings were up and Shanti's budget reflected the company's profit sheet: fat and sassy.

And Shanti knew it couldn't last.

"It's like the Native American saying," he says. "As you prepare for battle, you must plan ahead so that if you are faced with your death, you are not afraid."

Now, amid headlines screaming about layoffs, bankruptcies, and the dire state of the national and global economies, Shanti and his company are sitting tight. Like everyone else, they're feeling the pinch of reduced sales and a bearlike market, but as of press time, there were no layoffs in sight for American Axle.

So how did they do it?

Back in 1999, Shanti decided against staffing up his IT group with full-time employees, knowing that when the inevitable rainy day came, it would be easier on morale to lay off part-timers. He also negotiated flexible terms with his outsourcing partners, stipulating what would happen if the economy headed south.

A TALE OF TWO BUSINESS ENVIRONMENTS

Yesterday, your biggest problem was how to feed the enterprise's bottomless appetite for new applications, new services and new initiatives. Today, you need to know how to manage layoffs, budget cuts and diminished expectations. See this story, **WELCOME TO HARD TIMES**. But the weeping, wailing and woe-is-me-ing that has accompanied the bursting of the technology bubble is not, thankfully, universal. Some companies are still growing, and some CIOs are still wrestling with the thorny issues that come with growth. If you're one of the lucky few, see **LET'S NOT FORGET THE GOOD TIMES**, Page 130. If you're not, well . . . you can dream, can't you?



Shanti was smart back then, but how can that help CIOs now? Well, the principles behind these strategies reflect widely agreed on best practices.

For IT executives, the shift from boom

“Layoffs are sometimes unavoidable, but they indicate that business triggers were missed, and that’s how companies get into that situation.”

—KRIS PAPER, CIO
OF UTILICORP UNITED

times to hard times has been particularly difficult. Instead of frantically recruiting, CIOs find themselves faced with mandated staffing cuts. Instead of managing run-away growth (see “Let’s Not Forget the Good Times,” Page 130), they’re being asked to cut costs. For CIOs who reached the top of their game during the Internet boom, this sudden scarcity of resources, not to mention the pressure from the business side, can be disorienting and even frightening. Pressure and fear can lead CIOs to make hasty—and bad—decisions. “When it comes to this downturn, executives are headed toward short-term, rash decisions that appear to make sense but eventually damage their competitive positions and financial performance,” warns Darrell Rigby, a director at Bain & Co., a Boston-based global consultancy.



Opinions vary regarding the best ways to manage during hard times. Some say a downturn is a great time to consider outsourcing, while others say it’s the worst.

Some argue for immediate cuts across the board; others suggest it’s better to examine processes and projects in order to trim fat, not internal organs.

What’s best for one company may not be ideal for another, but after speaking with many IT executives coping with these hard times, we have assembled some best practices for managing during an economic downturn.

Resist Layoffs

If you’re thinking that layoffs are a quick way to solve budget problems, you’re not alone. A survey of 100 senior-level executives at Fortune 500 companies conducted by Bain & Co. in January found that almost 40 percent said they were likely to implement layoffs in a downturn. The survey found that “though managers publicly praise employees as their most valuable assets, executives are almost twice as likely to lay off employees as they are to dispose of physical assets.”

But just because lots of managers are cutting staff doesn’t mean it’s the right or the smart thing to do. In some cases, layoffs are indicators of a sick organization that doesn’t know how to handle people, says Kris Paper, CIO of Utilicorp United, a Kansas City, Mo.-based electric utility.

“I never want to get into a layoff situation—people wouldn’t want to come here,” Paper says. “Layoffs are unfortunate and sometimes unavoidable, but they indicate that business triggers along the way were missed, and that’s how companies get into that situation.”

If You Must Lay Folks Off, Do It Right

There are, of course, situations in which layoffs are inevitable. For Randy Weldon, who left his job as CIO of Geneva Pharma-



PHOTO BY SCOTT INDERMAUR

ceuticals in April, the specter of layoffs appeared after his company, a Broomfield, Colo.-based subsidiary of Novartis, dropped prices on its generic drugs in order to preserve market share. Weldon's department was one of the first places to feel the sting; his bosses called for a 30 percent cut in staff. While far from thrilled at the prospect of having to manage a layoff, Weldon used three principles that got him through a similar situation when he was director of application development at StorageTek, a Louisville, Colo.-based data storage company.

1. Communicate early and often. "People hate surprises," Weldon says. "They get scared if they find out the wrong way."

Weldon holds regular department meetings to keep his staff informed of what's going on in the company. Communication is vital, he says, but what's most important is that you tell the truth, no matter how difficult it may be.

"People are so afraid to tell the truth, but if you do it the right way, your staff will respect it," he says. "I try to put a good face on the situation, but I always tell the whole truth. Give them the positive and the negative, and keep them up to date."

2. Try to limit the damage. It's the CEO's job to decide when and where to cut, but she won't always be aware of how those cuts can affect the rest of the company, says Weldon. Help the CEO and the senior management team understand the exact nature of the demands on your department and how reducing the number of people available to answer those demands could affect the bottom line.

"CEOs typically want to make big cuts," Weldon says. "I went to senior management and let them know that the demands on my department were going up, not down. They needed to see that there was a need to hold my team together longer to support the transition caused by the restructuring, rather than cutting the number of critical employees."

Have a goal in mind when initiating this conversation with the CEO. For example, Weldon went to his CEO to negotiate for retention packages and bonuses to help keep



"I made a list of what will no longer be supported when I've cut 30 percent of my team, and that scared the executive team."

—RANDY WELDON, FORMER CIO.
GENEVA PHARMACEUTICALS

the critical members of his staff on board.

"I made a list of what will no longer be supported when I've cut 30 percent of my team, and that scared them," says Weldon. "So they gave my department a higher number of retention packages than any other

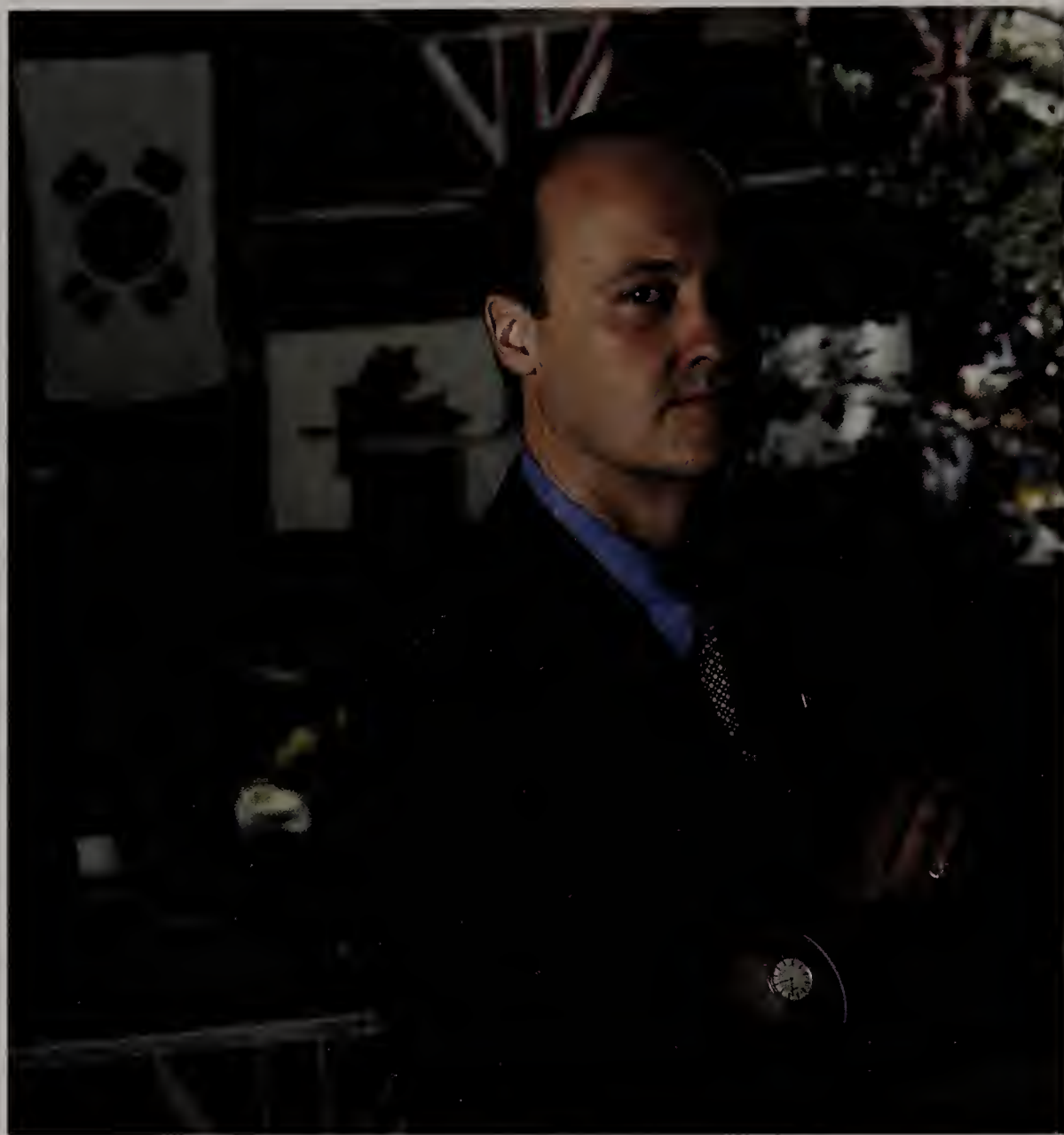
department in the company."

So far Weldon's tactics have worked: As of March, only one of his 19 business-critical staff members had left for other jobs.

3. Cut from the bottom up and consolidate. No one enjoys cutting his workforce, but if you look closely, you can find weak spots. For example, Weldon began by cutting through attrition. When his CEO mandated a 30 percent cut from a staff that was still several positions short, Weldon began by looking at people who weren't meeting his expectations.

"Look at performance problems first. This is hard because if you've been doing your job correctly, there hopefully aren't many people in that situation," he says. "You certainly shouldn't have more than 5 percent or 10 percent of your staff in that category."

Next, Weldon focused on areas with



When *budget cuts* were mandated, Roadway Express CIO Robert Obee (above) was able to make his number by laying off contractors, not permanent employees.

low-priority projects or tasks that had recently been eliminated. Geneva's manufacturing department had cut several projects, so he trimmed the number of people who were focused on manufacturing. Then he consolidated. Rather than having several

application managers in different areas, he created a position for a manager of applications and application development and filled it from within.

"You have to look at the whole structure when you cut people and make sure you cut vertically as well," Weldon says. "Work with the management team on the project prioritization list and cut a whole team."

After all was said and done, Weldon found himself with 24 staff members, down from 35.

Hire Contractors

Like many CIOs, Utilicorp's Paper staffs for a baseline, not a peak, by using the minimum number of employees necessary to keep her department productive. She says that by hiring consultants and contractors as a percentage of her staff, her department

is safeguarded in the event of cutbacks. If cuts are needed, she can dip into the consultant base rather than her full-time staff. Knowing this, her employees feel more secure, and that in turn improves morale.

Robert Obee, CIO of Roadway Express, a trucking and transportation company headquartered in Akron, Ohio, planned for a downturn when creating his staffing plan last October. When times were good and the temptation was strong to hire permanent staff at a lower cost than contractors, he made sure that 15 percent to 20 percent of his slots were filled by contractors. When budget cuts were mandated early this year, he cut about 20 percent of the contracted staff.

"When it was necessary to share the financial burden with the rest of the company in reducing personnel-related costs, we were able to do that without impacting our permanent employees," Obee says. "We did that by going through our portfolio of contracts and deciding which contractors would least impact projects if they left, and those were the ones we let go."

Staffing with consultants and contractors is fast becoming a common way of doing business, particularly in the IT parts of an organization, says Bain & Co.'s Rigby. "It can be a very effective way of managing because it adds greater flexibility," he says.

Train for Versatility

For Richard Talaber, CIO of Horsham, Pa.-based VerticalNet, a business-to-business marketplace for vertical industries, the most efficient way to handle staffing is to focus on training and retention. In January, VerticalNet laid off 150 people, but the cuts didn't significantly affect Talaber's department, primarily because VerticalNet has acquired 22 companies since mid-1998 and desperately needs every one of its IT staffers to help integrate the new systems. Still, Talaber is working with his staff to optimize their skills and reduce redundancy. For



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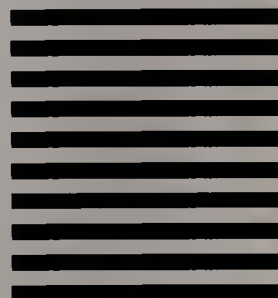
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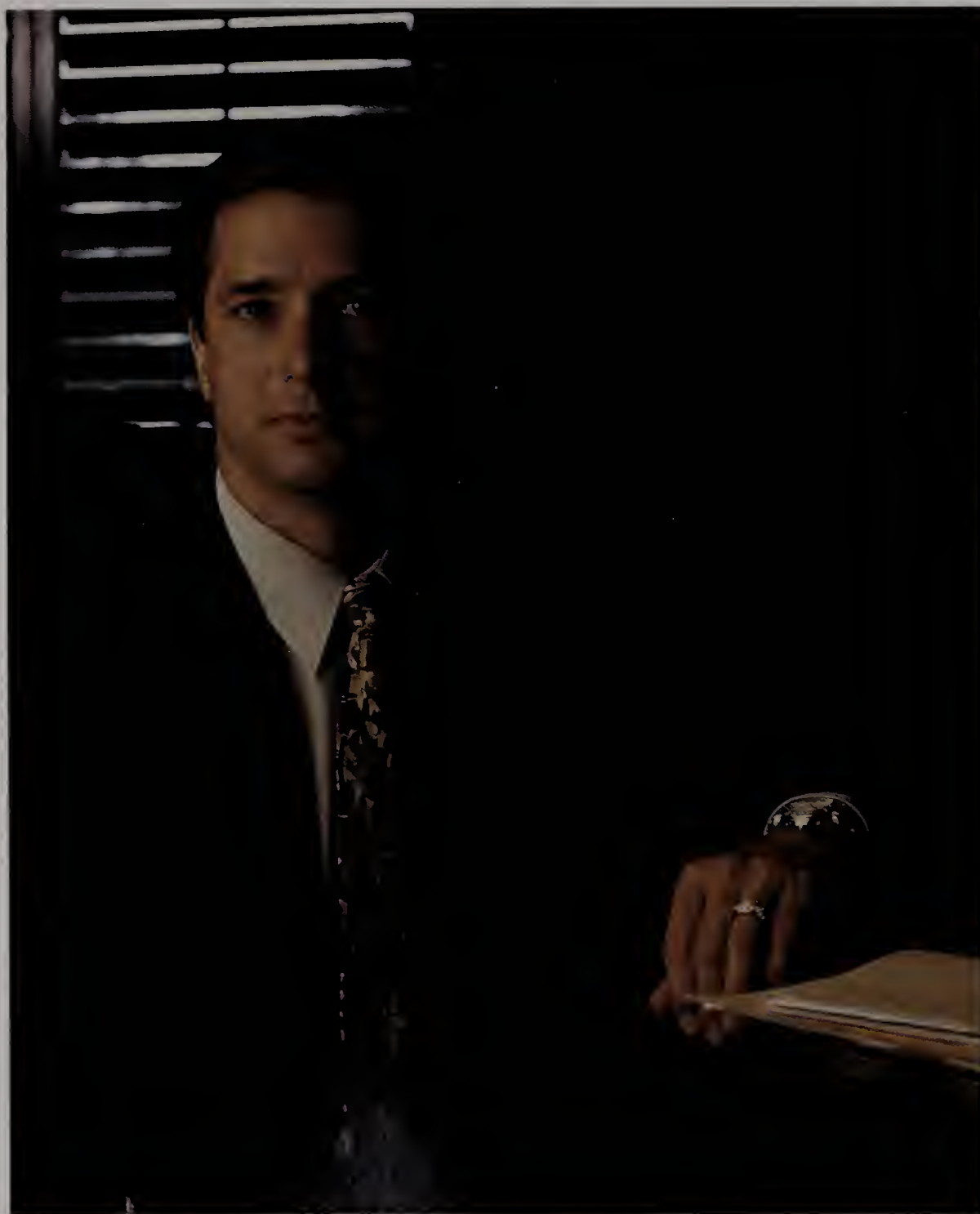
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example, if someone is hired to work the help desk, Talaber will also train him to be a Web engineer or a systems administrator. The employee will be taught problem solving and networking, and he will get his Microsoft certification, which increases his value to the company.

"That way, when they're ready and a position is open, we can move them up from within," Talaber says. "That flexibility can help you move from being oriented toward break-and-fix kinds of situations to planning strategically for things like change management. Optimize what you have."

Cross-training employees also means that Talaber needs fewer staff members and if a

"Optimize what you have," says VerticalNet CIO Richard Talaber. If he hires someone for the help desk, he also trains him to be a Web engineer or a systems administrator.



certain project is delayed or cancelled, staff can be shuffled according to their skills. This is another way to avoid layoffs.

Think Twice Before Outsourcing

There are many benefits to outsourcing. It can be an effective solution to mandated budget cuts. But it's not something to leap into immediately, especially during a downturn, says Andrew Bartels, senior research analyst for e-commerce at the Giga Information Group.

"It's not a good idea to start thinking about outsourcing right now," Bartels says. "Outsourcing has too many issues around it for CIOs to do it quickly and right. The odds are that if you go through with it, you won't be able to outsource in a time frame that's meaningful. Once you do the due diligence and think it through, you'll be 12 months down the road, by which time the economy is hopefully picking up. You might be ready to outsource at just the wrong time."

According to Bartels, outsourcing is a "quick hit solution" that often produces adverse consequences. The odds are high that if a CIO tries to rush through this kind of major decision, he will end up paying for it in the long run. Even if you do it right, says Bartels, you might not get the savings you want in the time frame you need.

Time to Renegotiate

Remember, you're not alone. Outsourcers are also having a tough time. So if you're already engaged in an outsourcing initiative, now is a good time to renegotiate price and service. In March, and continuing through April, Novara Comp Services, a Westbury, N.Y.-based IT services provider, halved its hourly rate to better "combat the downturn in the market." American Axle's Shanti renegotiated contracts with EDS Corp. and Compuware and built in a flexibility option



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so that he can increase or decrease the number of contractors in his department depending on his current need.

"If the economy really tanks, we can react very fast to changes," Shanti says. "That's the ultimate relationship to have in IT—flexibility."

Strengthen Your Processes

Times change. Where once CIOs were asked to create new systems for new e-business initiatives, now they're being asked to cut costs while maintaining good customer relations. To properly handle such demands, the best thing to do is reevaluate the strategic position of your department in relation to the company as a whole, says Ken Bohlen, chief innovation officer and executive vice president of Textron, a Providence, R.I.-based developer and manufacturer of automobiles, aircraft, and financial and industrial products.

"Manage the business as it is right now," Bohlen says. "You have to take a step back and not get overwhelmed. Think about the programs you have. When your company emerges from the downturn will you have the programs you need, or will you need to regroup and refocus your initiatives?"

According to a study conducted early this year by Mercer Management Consulting, a New York City-based corporate strategy company, the average downturn lasts about a year, with the economy receding 1 percent to 2 percent. Still, it's incredibly difficult to judge when a downturn will right itself.

"The challenge is that you can see a downturn coming, you can know you're in one, but the duration and depth vary," says Robert Atkins, vice president of Mercer and coauthor of the study. "A CIO's steps and strategies need to reflect this uncertainty."

When a recession takes hold, most managers instinctively reach for the lever marked "10 percent cut across the board" and hunker down, Atkins says. They order layoffs, hoard cash, delay product development and wait for tough times to end. If they're lucky, he says, that's what their competitors will do.



*One thing
CEOs are looking for is
responsiveness, says Ken
Bohlen, CIO of Textron.*

*"You have to be aggressive
when it comes to making
decisions like delaying or
pushing off a key project if
the market has changed."*

What successful managers do, however, is start to prepare their transition to economic good times. They can do this by becoming indispensable to their customers and by cutting costs carefully rather than impulsively.

"The challenge during a downturn is for IT to work on improving processes and automation," says Shanti. "You have to make an investment during this time to prepare for an upswing. When that comes, if you're not prepared, you can be very inefficient."

Despite moderate pressure to cut costs, Shanti is using the current slowdown to automate his supply chain and inventory processes. The project is an example of Shanti's mantra of management: Always improve efficiency and plan ahead. Every five years, Shanti meets with senior management and creates a five-year strategic plan that focuses on using IT to improve efficiency in every aspect of the organization. These plans, he says, are the best way to be prepared for possible downturns.

"In the auto business, we expect downturns every three years, so we plan for that," Shanti says. "It just so happens that in the last 10 years, we had a boom that didn't stop. But that didn't keep us from planning for a downturn."

Shanti thinks the current plan will hold up as long as the slowdown doesn't turn into an outright recession. If that occurs, all bets are off and IT goes back under the microscope. "Then you have to look at your top 10 priorities," he says. "Numbers eight, nine and 10 will probably be pushed out until 2002. If it becomes a recession, you must cut spending, and everything from operations to priority projects has to be reshuffled."

Shanti and his team reevaluate their strategic plan every year. "If we didn't do that last summer we'd be in bigger trouble right now than we are," he says.

Get Organized

Last fall, when the economy was still good, CIOs around the country sat down to draft their budgets for fiscal 2001. Then, within weeks, resources became scarce and suddenly there wasn't any money for a per-

all picture and if it will help us return to the bottom line."

The project management office makes it easy to spot projects that don't warrant the use of scarce resources, Obee says, and it helps prevent his staff from wasting time working on projects that aren't feasible.

Protect Your Flank on the Business Side

Alignment is important all the time, but it becomes even more critical during hard times. Business-side executives will ask questions about cutting costs and improving efficiency while maintaining performance, and CIOs need to know how to give good answers.

"It's important that you help the business side understand how your initiatives will help the company and what needs to be done for them to succeed," says Textron's

tion floor for a few days and walk a purchase order through the entire process so you understand what's working, what's not and whether something like a new supply chain system or an organizational change is going to fix it," he says.

The Customer Comes First

When resources become scarce, the customer feels the pain. Lower levels of staffing can adversely affect customer service. CIOs say that during downturns they often feel a greater demand on their time from internal and external customers, but have to balance available resources with acceptable levels of service. Now is the time to examine your approach to your external customer base regarding profit levels. But don't make rash decisions about customer relationships without thinking hard, says VerticalNet's Talaber.

"Don't have knee-jerk reactions," Talaber advises. "Don't react to users and customers without understanding the business model and what the desired results are. For example, if an internal user is pushing for you to complete a project that's not on your product roadmap, and they divert the attention of people in your group from working on projects that *are* on the roadmap, keep yourself focused. Don't be pushed around."

In good times, all customers are good customers. But during a recession, it's time to look at which customers are profitable, says Atkins of Mercer Management in a report titled "Bring on the Recession." "Should a recession hit, your best customers typically provide an even greater share of your profits. Your worst customers typically become value destroyers. So cull your portfolio and cut out your weakest market segments."

Once you've identified your best customers, reach out and "kill them with kindness," Atkins says. Do what you can to make their lives easier by easing payment



It's essential for CIOs to put themselves in the CEO's shoes. "Get out on the production floor and walk a purchase order through the process," says Textron's Bohlen.

centage of projects that had received funding in the planning process. No one likes giving up on projects, but you have to do it and do it right.

At Roadway Express, CIO Obee recently established a program management office that oversees all the company's large cross-functional projects scheduled for the next nine to 18 months. All information for each project, from expected benefits, projected costs and ROI, is filed together. This means that if Obee needs to pull the plug on an initiative, he doesn't have to guesstimate the consequences.

"We can do 'what if' analyses," Obee says. "We take two or three projects and see what happens if we defer them or eliminate them and see how it affects the over-

Bohlen. "At meetings, listen twice as much as you talk, and then explain your problems and needs in terms of how it will affect the business." One thing CEOs are looking for from their CIOs is responsiveness, Bohlen says. "You have to be aggressive when it comes to making decisions like delaying or pushing off a key project if the market has changed. Be quick to react and be willing to stop and start. It shows you know how to generate growth. It's hard when you've had 20 people dedicated to one project and you have to change direction. But you have to be responsive to survive. Denial won't do anything for you in the long run."

For alignment to improve, Bohlen says, it's essential for CIOs to put themselves in the CEO's shoes. "Get out on the produc-



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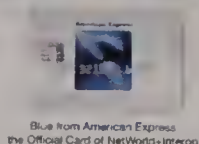
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terms, adjusting offers and lending staff to help with problems. This can reinforce your status as their supplier of choice, and they will repay you with loyalty.

Roadway Express's Obee, however, vehemently disagrees with Atkins' advice. For him, and for many other CIOs, there is no such thing as a bad customer, particularly when the economy is rattled.

"Any company that knows their costs and profits the way they should will say this isn't a time to dump customers. It's just the opposite," Obee says. "If you're going to find unprofitable parts of a customer's business with you, it should be done during good times, not bad."

During the past three years, Obee's department built a data warehouse to manage Roadway's customer information. Every



transaction with each customer is recorded and broken down. For example, Obee can look at any particular customer and see whether or how often they use Roadway's international or time-critical shipping services. If there are services the customer isn't using, Roadway's sales force can jump in. By working with customers to maintain business connections, there is less need for culling unprofitable customers.

"You can't look at any customer as a monolith based on a cost composite," Obee says.

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It's macho to say one relishes the challenge of difficulty, but let's be honest: Hard times are not fun. They are, however, here, and you've got to deal. The critical question is what shape you and your company will be in when the hard times are over.

"Each downturn is an opportunity for CIOs and their departments to rally around a common cause, to demonstrate pride in teamwork, to put in long days and nights, and to make some difficult decisions," Obee says. "In every problem and challenge there is learning and opportunity."

And when hard times are over, you may just find yourself in better shape than you were before. **CIO**

Do you have best practices for managing during hard times? E-mail Staff Writer Simone Kaplan at skaplan@cio.com.

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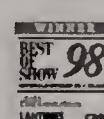
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Providian CIO Tanni Graichen looks to her marketing department for clues to the company's future plans—and the demands they will place on IT.

Not everyone is going down the tubes. Here are four strategies for CIOs fortunate enough to be coping with rapid corporate growth.

BY DEREK SLATER

Times



NOUGH DOOM AND GLOOM.

If you're worried about scarce resources and tense budget meetings with your cranky CFO, turn back and read "Welcome to Hard Times" (Page 118). But darn the economy, some businesses are still cranking full speed ahead. Last year, for example, Providian Financial's revenue grew by 77 percent, and Wall Street analysts expect the company to average 25 percent growth for the next five years. Meanwhile, storage vendor EMC is an \$8.8 billion company talking about \$10.5 billion, and QVC, now hawking goods via the Web as well as its television channel, is adding 250,000 new customers each month.

Eventually, the economy will perk up. These things go in cycles, as Adam Smith

assured us more than 200 years ago in *Wealth of Nations*. Other ships will again rise with the tide. So whether you're in growth mode now or still scanning the horizon for signs of land, here are four tips—beyond the obvious stuff like "buy bigger processors"—that veteran CIOs offer for riding the growth rocket.

The Differences Between:

HARD TIMES

- Cross-train your staff for flexibility.
- Be wary of outsourcing arrangements.
- Hire more in-house contractors.
- Focus on customers and process.

GOOD TIMES

- Let your people specialize and focus.
- Outsource minor application management.
- Avoid giving contractors all the good assignments.
- Focus on process and customers.



QVC CIO John Link says his company's reputation "for having a lot of technologies and a lot of projects" helps him recruit staff for growth.

over architecture decisions or to code the most flexible systems; when revenues are spiking upward, the demands on the IS group are immediate.

Tanni Graichen, executive vice president of Integrated Card Business and CIO at Providian's credit card unit in San Francisco, recalls a four- or five-year period when her company really hit the big time. "The demands from the business became a relentless waterfall," she says.

"Or as my managers referred to it, 'Drinking from the fire hose.' The expectation was that we would deliver [new applications and functionality] every three weeks." As a result, some pilot applications were thrown into use just to keep the company moving forward. These kinds of systems eventually become a bottleneck to future corporate growth owing either to lack of functionality or scalability. Even though Graichen now oversees a well-resourced, 800-plus-worker IS department, "You can't deliver enhancements every three weeks when it's spaghetti code on top of spaghetti code," she says.

The lesson: CIOs must be willing to pull the plug on outdated systems.

Providian now has a standard process for putting old-timers out to pasture. Mission-critical applications slated for replacement



1. Know When to Fold 'Em

One of the drawbacks of a high growth rate is an endless cascade of demand for new applications with new functionality. To meet those demands, the IS department can end up using stopgap applications and spaghetti-code upgrades. A word to the wise: It's better to replace those applications than to keep upgrading them.

Clearly, businesses that are quickly building revenue and adding employees need highly scalable IT systems, networks and applications. For example, West Chester, Pa.-based QVC runs its core transaction processing on fault-tolerant Stratus systems. "It's not a real popular platform these days, but the people who use it need either the fault tolerance or massive throughput," says

QVC CIO John Link. Or both. Link says the system hasn't had a single second of downtime in at least a year. And that's despite the retailer's wildly unpredictable transaction loads, which can spike up to \$7 million of orders processed in a single hour when a particularly hot set of items runs on the TV channel.

The problem is that most high-growth businesses don't allow CIOs time to mull

"You can't deliver enhancements every three weeks when it's spaghetti code on top of spaghetti code," says Providian CIO Tanni Graichen. The lesson: CIOs must be willing to pull the plug on outdated systems.



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receive only the minimum upgrades necessary to keep them wheezing along until the new application is ready. Maintenance of minor applications, though, is outsourced—handed over to offshore coders. This has two effects. One, the cost of maintenance on the older system goes down. Two, Providian's internal group can focus its attention on getting the new system right for the expanded business requirements.



GOOD TIMES

those questions: The good folks over in marketing.

"Any company that is growing probably has a very good marketing arm, and those people tend to be people who forecast," she says. The marketers can tell the CIO what kind of growth to expect for the company and what business drivers are generating that growth. Then it's up to the IS team to translate those business factors into a related forecast for IT needs. (For more good thoughts about the marketing department, see "IT Versus Marketing," Page 98.)

For example, "If the business is going to add 150 new call center agents, then we know that means we need X number of additional security people to get the [new agents'] network IDs up," Graichen says. At Providian, that translation is done by a team

that meets on a monthly basis to review what's going on in the business environment and to make sure that IS is staying on track. The team is lead by the head systems analyst—who has project management experience—and includes operations staff, desktop personnel, systems and development managers, and database guys.

Graichen notes that some marketers are optimists and others are pessimists. So it isn't enough just to read their numbers off the sheet; the CIO must forge relationships and know which way the numbers are likely to lean.

2. Make Friends in Marketing

How many extra desktops will you need to buy next year? How many more megabits of bandwidth or gigabytes of memory will next month's expansion demand? Graichen looks to a surprising source to begin to answer

3. You Want Specialists, Not Generalists

During hard times, the wise CIO makes sure his employees are flexible and trained to take on a variety of tasks. Fast growers, however, say their IS team members are more productive when they are allowed to focus on one job. That requires a clear organizational structure for the department so that everyone knows which task he is supposed to be handling. It also helps if line-of-business workers have a single point of contact within the IS group. That avoids confusion and prevents IS workers from doing double duty as expectation managers.

Dave Ellard has been CIO at Hopkinton, Mass.-based EMC for less than a year, but he was readied for the storage highflier by 13 years at nearby Boston Scientific, which grew from \$30 million to \$3 billion during his tenure. Ellard's first concern at EMC is maintaining alignment with the goals of the rapidly growing business side. And his solution for alignment at his new job starts with an organizational change: putting in place a set of process and portfolio managers who will serve as the 750-member IS group's face to its internal customers.

"When the business is growing fast, it has process challenges. And the only way you get a bang for the buck in a technology project is if you change the processes," Ellard says. The traditional technical silos will

Profiting from the Misfortune of Others

Looking for employees? Suddenly, it's a buyer's market.

THE ECONOMIC SLOWDOWN is actually a blessing for a lucky few. And we're not just talking about repo men, dotcom yard sale shoppers and loan sharks. Greg DeFronzo, MIS director at the Massachusetts Water Resources Authority, says that as much as he'd like to see the economy turn around, staffing is much easier at his agency when the Nasdaq is shaky.

The numbers bear him out. In more prosperous times, the yearly turnover rate among DeFronzo's IS group rose as high as 35 percent. Early this year, that churn fell to 4 percent.

"The government sector is always the opposite of the normal curve, since we don't pay market rate salaries," DeFronzo explains. In boom cycles, like the one at the end of the past century, staffers run off to the private sector to rake in the big bucks. But when the stock markets crater and layoffs begin, DeFronzo's phone starts ringing with people calling in search of the stability offered by public sector jobs. "I had a bunch of people last summer who left to join dotcoms. Now some of those people have called to see if they could get their jobs back," he says.

No dice; the positions were already filled.

Growing private sector companies can likewise benefit in their hiring efforts. "Overall there's still a shortage of technical people in this job market, but it seems like this year it's getting a bit easier" to fill positions opened by corporate growth, says QVC CIO John Link. Link cites not only dotcom fallout but also layoffs among IT consulting companies as the reason more qualified IT workers are floating around.

—D. Slater



EMC CIO Dave Ellard's first concern during expansion is to institute processes that will ensure IT's alignment with business-side goals.

remain in place at EMC—network management, application support, data center—but the workers in those silos will no longer be confronted by a deluge of business-side requests. Instead, the portfolio managers (line-of-business employees with IT training) will take all user requests and prioritize them using a standard methodology. And the process managers will ensure that old, manual processes—atavisms from EMC's smaller days—are revamped and streamlined before they get encoded in software.

The key result of this reorganization, Ellard says, is that the most important projects will get the most attention, while

the lead technical personnel are freed up to do what they do best: deliver great service levels.

Graichen uses a similar plan with a somewhat different explanation. "When you're a little company, a lot of deals get done in the hallway. When you get bigger, you can't work that way; there are too many groups to coordinate," she says. Her solution was to create a project management office. "The project managers are independent of the manager who is responsible for the deliverables; they give the users someone to go to and keep the communication going, while

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the deliverables people can still keep the trains moving."

4. Give Contractors the Boring Stuff

There's no way around the fact that high growth means lots of work. The trick is to avoid letting those demands turn your IS shop into a sweatshop.

Ultimately, if your IS shop has a reputation for burning people out, it not only causes the employees grief but also, by making those employees less productive, slows the business's ability to steam ahead. It's a well-known management mantra that employees are more willing to work hard when the work is interesting. Unfortunately, keeping the juicy assignments in-house is difficult under rapid-growth stress.

"We used to use contractors every time we put a new module in," says Graichen, "because all our people were busy keeping the other stuff alive. So the staff felt like the contractors were getting all the cool stuff." Even in the face of crazy expansion like last year's, Providian has forced itself to scale back on contractor use. Graichen says contractors currently make up less than 10 percent of the IT workforce.

Link says reputation makes a huge difference in hiring, and word gets around whether a given company is exciting or just exhausting. "We focus our hiring efforts on local colleges and people with local ties," he says, "and we have a reputation locally for having a lot of technologies and a lot of projects." QVC has a goal of adding 50 new positions in the IT department during 2001, and 44 were already on board by the end of the first quarter, so something's clearly working.

Nobody claims rapid growth is easy, but it sure beats the alternative. Following these four strategies will smooth the ride for both the CIO and the IS staff. **CIO**

For Executive Editor Derek Slater, the glass is always half full. If you're lucky enough to be thinking about managing growth, let him know at dslater@cio.com.

British Telecom uses technology to transform a moribund corporate library into KM central

BY JASON COMPTON

Dial K for Knowledge

The Organization: British Telecommunications

Founded 1896, spun off from British Post Office in 1981
Headquarters London **2000 revenues** 18.7 billion pounds (US\$26.6 billion) **Employees** 137,000
KM challenge Turn a paper clipping service and brick-and-mortar research library into a one-stop, Web-based intelligence center **URL** www.bt.com

IN THE OLD DAYS, British Telecom's corporate library was not a place for the faint of heart. Imagine a large room stuffed with unfiled paper and reports, where everything was checked in and out by hand—and where 10 librarians frantically tried to keep up with the research needs of several hundred British Telecom sales, marketing and strategy professionals.

Analysts who didn't want to wait for research to arrive via mail faced the daunting prospect of a trek to London to do the work themselves. Andrew Levy, a competitive programs manager for British Telecom (BT), says he used to sandwich visits in whenever he could, but it wasn't a convenient trip for him. "We're talking about making a 200-mile journey," he says.

These days, however, BT employees can't afford to wait days for competitive intelligence. The company must quickly respond to stiff competition from a new crop of smaller, nimbler telecom upstarts—not an easy task for a business with deep monopoly roots. British telephone regulator OFTEL reports that as of June 2000, BT serviced a little more than 8.5 million of the United Kingdom's 10 million business lines. That's still a formidable share, but a far cry from the complete dominance BT enjoyed as recently as 1992, when the company controlled virtually all of the country's copper.

So while the old BT may not have needed the service it calls "intellact," the BT of today certainly does. Intellact essentially takes many of the resources of the old research library, adds a few more sources, organizes them and puts the whole thing online, where it's available to nearly 90,000 of BT's 137,000 worldwide employees. "It's used by BT people in just about every job function and at every level, including sales, service, marketing, the CIO and help desks," says Peter Woolf, intellact manager. For these employees, the Web-based system is their



“Intellact is used by BT people in just about every job function and at every level.”

—PETER WOOLF, INTELLACT MANAGER, BRITISH TELECOM

window to the world, offering data, news and research on practically every topic on the BT corporate radar. Intellact incorporates sources ranging from *The New York Times* and *The Wall Street Journal* to obscure regional telecom journals, as well as proprietary research from analyst companies like Forrester Research and Gartner. Between 2,000 and 3,000 daily stories are divided into 100 different topic channels, including

roughly 40 competitor profile sites, 20 vertical market portals, and dozens of technology and regionally focused centers.

The System

Intellact evolved out of the corporate librarians' need to get competitive information to the field as fast as possible. The group ran a paper-based news clipping service for competitive research but could support only a few

hundred BT users. Searching for a way to get the word out to more people, the Information Resource Center (IRC) staff switched to a weekly e-mail newsletter in 1991. While it reached a broader audience, the e-mail service lacked interactivity. When the research moved online, the librarians—now intellact staff—finally realized their ambition of giving knowledge workers immediate and unfettered access to an entire library.

Today, the system logs 7,000 user sessions per day, with an average duration of seven to eight minutes—although some market analysts may literally live and breathe the service from punch-in to quitting time. Intellact hasn't completely abandoned its roots either: 4,000 subscribers still get a weekly newsletter, and many intellact users also receive a daily e-mail briefing that summarizes the top 10 news stories in their defined areas of interest.

The core intellact news feed comes from Factiva's Reuters Business Briefing Select. Although it's not the only wire service available, BT prefers the vast library offered by Factiva. BT gets more than 250 sources from the Factiva news feed out of a possible 7,000 publications offered. (Factiva's content is sourced from a large number of newspapers, magazines and news wires, which include Dow Jones and Reuters.) “We can cover requirements from Australia to North America and get anything from very specific U.K.-focused telecom research to something as broad as the global pharmaceutical industry,” says Woolf. “It's not perfect, it hasn't got every single source you'd want, but in terms of its scope and flexibility, it's very effective.”

BT also licenses feeds from analyst companies such as Forrester and Gartner and incorporates proprietary research.

In conjunction with research arm BT Labs, the intellact staff designed and built the

portal interface, integrated the outside sources with the primary news feed and incorporated a Verity search engine to drive both automatic sorting and manual queries.

Organizing Content

Every major topic—such as major competitors, industry customer groups and some technology areas, such as wireless—has its own page. Those pages are automatically populated by the news feed and BT's content management system, but the intellact staff members organize the pages and give the really juicy stories top billing.

Woolf notes that the IRC team's responsibilities shifted dramatically with the growth of intellact. Instead of sifting paper, they now must make educated judgments about what information is most important. "The team is now focused on categorization of content," he says. While the search engine does most of the sorting automatically, using search scripts that the intellact staff have defined and refined over time, the homepages for the news and research sections are still edited by hand. "[Editors are] responsible for liaising with customers inside the business, figuring out what their requirements are, dealing with external [research] vendors and then putting a portal page together which automatically posts the latest relevant research from each supplier," says Woolf. Each of the five site editors makes sure that vital reports are given prominent and long-term placement on relevant news channels, rather than rotated off automatically when newer stories arrive.

If users can't find what they're looking for on the edited topic pages, intellact provides a straightforward search page that can search on keywords, time frame and sources—either by individual source, category (such as news or outside research) or the entire intellact database. The search engine then ranks and summarizes the results. BT currently licenses content for six months, which Woolf says is a good balance between saving money and having access to important information.

Neither BT nor Factiva would disclose the total or ongoing costs associated with intellact, and any ROI analysis falls into the anecdotal.

EXPERT ANALYSIS BY TOM DAVENPORT

Why Pay for Knowledge?

AH, THE LIBRARY. That slightly musty smell. The cushy leather armchairs. Maybe even a glass of sherry while we slowly turn the pages. Alas, if such a world ever existed, it is now gone—not unlike the vanished monopoly telecom company. Formerly cozy libraries (well, corporate libraries were rarely that cozy) have had to become dispensers of electronic information. This transition has been happening for many years but was accelerated greatly by the Internet.

Now the challenge for libraries and librarians is clear: how to add value to the Internet? Or more precisely, how to add value to what people perceive of the Internet? Both corporate types and students now seem to believe that if information isn't on the Web, it simply doesn't exist. So why should they pay extra for the likes of "intellact"? (After all, it seems misspelled and isn't even a proper noun!) I'll bet that many user department managers are saying, "As soon as they put on that charge, I'm headed for the Big Net." Why rent the cow when you can get the milk for free? At best, intellact probably feels to them like an intranet, and their friends at other companies are telling them they don't pay a farthing for intranet access.

This is my assessment of the user view, not my own perspective. I think that a good librarian—maybe we should call them "information analysts" from now on—is worth her weight in sterling. Clearly the British Telecom competitive intelligence analysts are already adding what might be called "navigational value." As librarians have done for centuries, the analysts add value by first determining what information is required, then finding the right sources, then categorizing the information so that it's easy to get to. As with the Yahoo portal (Yahoo was the best news for librarians since Gutenberg), the invisible hand of the analyst ensures that the browsing or searching user is likely to find what she seeks. However, it's an invisible service, and again, the average user may not appreciate it.

The other obvious source of value from analysts is not mentioned in this case file. It's education—teaching users how to search for information, how to use it in the context of their job, and how to rank the quality and validity of different information sources. The more qualified the user, the greater appreciation for the analyst's screening and categorization. But there's a perception problem here too; research suggests that most information users in companies have had no training on how to search for information, yet they still believe that they are quite good at it. So even if education were offered, users might not buy into it.

In the long run, I believe that information analysts and systems like intellact will be highly valued. They are the only way to protect information users against the onslaught they will inevitably face. In the short run, however, people believe that "information wants to be free." Eventually they will realize that you get what you pay for.



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dotal category. Woolf says he has heard a number of stories over the years in which intellact is credited with providing the necessary details to expedite or close a particular deal or capture the attention of a certain customer. For example, he cites a company survey in which one account director reported his sales team generated 1 million pounds (about US\$1.5 million) in new business by using intellact briefings. The most compelling hard ROI thus far comes from a 1999 survey of intellact users, conducted as part of an ongoing internal marketing campaign to boost the system's popularity. The 800 respondents indicated that intellact was saving them a total of 12 full-time employees.

The Future

Last October, intellact was moved out of BT's U.K. Retail division and into the enterprisewide Business Services unit. According to BT Business Services CIO Tudor Rees, the switch in jurisdiction reflects an appreciation for intellact's role in the company's international portal. In part, it also made it easier to market intellact as a component of BT's knowledge management offerings, from which BT's line-of-business CIOs choose when planning their own slate of resources.

Until the switch, intellact users were essentially enjoying a free ride on the research and technology funds the U.K. Retail division spent on the system. The move to Business Services ended that scheme, and intellact now charges the BT groups it serves. So far the



Divisional CIO Tudor Rees says that BT's KM portal has the potential to make money for the company.

charges are being slowly phased in, but the ultimate goal is to get the users to completely fund intellact's operations.

The call for cash has led to a counter call for more content selectivity. When intellact was operated gratis, nobody complained when Woolf's staff added another news feed. Now, however, division managers are starting to get sensitive about closing the gaps between what they pay for and what they use. Accommodating those selections seamlessly is still an open problem for intellact.

With a workable revenue model in place and a popular information destination behind it, why keep the money flowing strictly within the family? BT is giving some thought to sharing the fruits of its information-gathering labors with an inner circle of suppliers and customers—for a fee, of course. "Over time, we believe the service may have potential outside of BT," says Rees.

Rolling out intellact far beyond BT's staff will likely have to wait for an overhaul of

the system, planned for later this year. Among the projects is a replacement of the Web layout and personalization engine developed by BT Labs. The team also plans to expand the range of Internet-based sources, offer distinct page designs to different BT divisions and outsource the responsibility for managing and maintaining the server hardware. A multilanguage interface and live translation of content are also possibilities.

While the upgrades will be welcome, users like Levy really love intellact for its instant access to information; in the end, that's enough to make the system worth its weight in copper (twisted pair wire, of course). "I like to work where I can almost give same-day service to queries," says Levy. With intellact "the information is there, and it's enough to enable us to make the right decisions." **CIO**

Jason Compton is a freelance writer based in Evanston, Ill. Have any knowledge management case studies to share? Send them to casefiles@cio.com.

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A man with dark hair, wearing a dark blue button-down shirt and a dark tie, is leaning on a white metal railing. He is looking directly at the camera with a slight smile. In the foreground, there is a large, detailed architectural model of a multi-story building with many windows. The background is a modern office interior with large windows, some indoor plants, and other office furniture. The lighting is warm and focused on the man.

Randall Dolph, CIO at Gensler's Chicago office, says that using the Web to connect his firm's architects with contractors can drastically speed up projects.

One of the most technologically antiquated industries, the construction business finally has seen the light

BY MATT VILLANO

BUILDING on i.T.

IN THE HEART OF CHICAGO'S NEAR NORTH SIDE, ON THE CORNER OF NORTH AND SHEFFIELD STREETS, A HALF-FINISHED EIGHT-STORY BUILDING BUZZES WITH LIFE. ON THE GROUND LEVEL, MEN IN HARD HATS AND FLANNEL SHIRTS work furiously to fight the clock and install windows. Up near the seventh floor, men weld, solder and hammer away, creating a cacophony that mutes honking cars on the streets below. At first glance, the whole project seems just like any other construction site—dirty, fragmented and remarkably low-tech. This building, however, is different.

In all, six architects, 40 engineers and more than 60 sub-contractors will work on the \$24.2 million retail-entertainment-residential project, and San Francisco-based architectural firm Gensler will coordinate their efforts through a local Web service that automates almost every aspect of the process using a collaborative, password-protected intranet. In the past, many of these contractors

Reader ROI

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- ▶ Find out why 2-D CAD is yesterday's news

PHOTO BY BLACK/TOBY PHOTOGRAPHY

Collaborative Systems

would exchange blueprints and employment bids via fax or Federal Express. Today they use the Web to quickly upload and send information electronically.

What's more, says Gensler's Chicago office CIO Randall Dolph, while subcontractors used to spend hours on the phone with suppliers ordering from catalogs, now they can connect to suppliers and order online. "This technology enables us to triple or quadruple the speed with which we can pull off a project," he says. "It's like we've been waiting for this kind of improvement all our professional lives."

Dolph discusses this new connective technology the same way a proud father talks about his child. For the first time, superfast Web connectivity is available to the midsize and small players, like Gensler, and not just the big guys like Bechtel (\$15.1 billion in revenue), the Houston-based global engineering and construction giant that has managed projects such as the \$20 billion construction of Jubail Industrial City in Saudi Arabia. From design and planning to procurement and production, companies in every corner of the architecture, engineering and construction (AEC) industry are undergoing a foundation-to-roof renovation of the building process, rejuvenating traditionally low-tech approaches with Internet-enabled IT. At a handful of the biggest companies, CIOs have incorporated new, proprietary Web applications to reengineer the way they use data from the beginning. Smaller companies without big IT budgets have opted for outsourcing, relying on a number of new subscription-based Web tools to revolutionize cooperation and collaboration in virtual space.

paper-thin profit margins of 1 percent and 2 percent have been attributed to fragmentation, performance improvements have resulted in significant cost savings overall.

Down the road, XML and wireless technology may pad margins even more. For now, Kent Allen, research director at Aberdeen Group, an IT think tank in Palo Alto, Calif., says industry bigwigs are simply enjoying the results of their current tech-

torch, the construction industry has been low-tech since day one," he says. "It's amazing to think about how far a little technology in this space can go."

in on the GROUND FLOOR

As Allen implies, companies in the \$1 trillion AEC industry have become what you'd call high-tech only in the past five years. Despite



Hank Leingang, CIO at construction giant Bechtel, recently developed an intranet portal that smooths the purchase order process—and saves on the hefty FedEx bill.

Subcontractors used to spend hours on the phone with suppliers ordering from catalogs. Now they can connect and order online.

These changes appear to be working wonders. Days, even weeks, are being shaved from project schedules. In an industry where

nological forays. "Think about it: With all that dirt and grime, with all those musclemen hammering away or firing up the blow-

how information-intensive these industries are, slim margins historically have made it difficult for AEC executives to justify IT expenditures. The mid-1970s exception was the introduction of computer-aided design (CAD) software, used by architects and designers to create blueprints and drawings. More than a decade later, well after CIOs in the manufacturing, aerospace and automotive industries

A man in a light blue button-down shirt and dark trousers stands in a doorway, looking directly at the camera. The doorway is framed by a metal grate with decorative circular patterns. Above the doorway, there are large, stylized red Chinese characters on a light-colored wall.

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honed enterprise solutions that leverage back-end data with front-end functionality, the AEC industry realized it wanted systems that could integrate data and project plans with the Web. Basic? Yes. Long overdue for the AEC industry? Absolutely.

Today, some of the industry leaders have implemented such applications, addressing every aspect of the engineering, procurement and construction (EPC) life cycle. For instance, Bechtel is working on a number of Web-oriented upgrades in the area of procurement. Under the guidance of Director of Procurement Jack Futcher and CIO Hank Leingang, the company recently developed a password-protected intranet portal where project managers can submit up to five times the number of employment and materials bids they could before. Dubbed the BPS, for Bechtel Procurement

CIO.com

See how the Web was used to **CUT THE COSTS OF BUILDING** the Venetian Resort Hotel. Read "Just Add Water" at www.cio.com/printlinks.

System, this application generates purchase orders in which project managers can solicit participating subcontractors to submit bids. BPS is just one of the online tools that Futcher says he hopes will slash Bechtel's \$3 million annual FedEx bill.

At Pasadena, Calif.-based Parsons Corp., a private, global engineering and construction company that recently renovated Ronald Reagan Washington (D.C.) National Airport, CIO John Thomas is dabbling in other areas. Last October, after years of handling project controls manually, Thomas launched

P-Works, a Web-enabled project control system that can access scheduling and financial project information from anywhere in the world. Thomas followed this with a \$4 million commitment to DMCS, an offline document and material control system upgraded into a Web-enabled platform where engineers and managers track the progress of a job by ensuring that materials are ordered and tracked on time for the least amount of cost. According to Thomas, this system will upload new information several times a day, and though it won't be up and running until December 2001, he expects it to save Parsons one year on a two-year project.

Similar proprietary efforts are underway at other privately owned construction industry giants such as Fluor Daniel and Black & Veatch. But this new game is not just for the big guys. Local governments and midsize

MOUSING AROUND

Disney goes for 4-D CAD in planning its latest big park

WHEN ARCHITECTS AND ENGINEERS at Walt Disney Imagineering Research and Development started planning Disney's California Adventure theme park in Anaheim, Calif., they planned to use current incarnations of computer-aided design (CAD) software. Then they thought better of it.

"We wanted to implement a technology that reflected the state-of-the-art feeling we were trying to convey," says Ben Schwegler, who, as vice president and chief scientist, oversaw the 4-D CAD portion of the project. "We wanted something special."

This was just about two years ago, and with the help of Martin Fischer, associate professor of civil and environmental engineering at Stanford University in Palo Alto, Calif., up the road, Schwegler hatched something special: 4-D CAD, an application that enabled project managers to see blueprints as an interactive movie with the added fourth dimension of real-time scheduling. At a stakeholder meeting last summer, more than 400 were on hand to see a virtual bear emerge from virtual rock.

The biggest accomplishment was the use of 4-D CAD in the development of California Screamin'—a roller coaster that glides next to a man-made lagoon. Because of the water hazard presented by this lagoon, this part of the planning process was scheduled to take a few days, Schwegler says. With production crunched, however, Disney



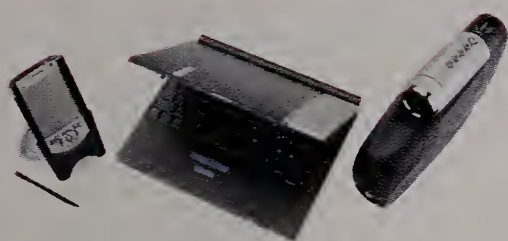
The once virtual, now real rocky bear peak at Disney's California Adventure park.

officials were able to test the coaster over the lagoon in virtual time, watching it perform flawlessly on a computer screen in a matter of minutes. A live test didn't need to be conducted until a few weeks before the park opened.

"Believe it or not, with all the safety requirements, building a roller coaster is a lot more difficult than erecting a skyscraper," says Schwegler.

—M. Villano

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COMPAQ
Inspiration Technology

Collaborative Systems

and small AEC companies are deploying homegrown Internet applications.

In Silicon Valley, civic officials from eight cities recently launched a website so that contractors can apply online for building permits (see "Permit Hermits," Page 150). Late last year, \$1.3 billion Knoxville, Tenn.-based homebuilder Clayton Homes unveiled

ect managers can exchange documents with engineers and architects, bid for subcontractor services, and even track scheduling and performance. Citadon, also based in San Francisco, is the 4-year-old byproduct of the June 2000 merger of dotcom companies Bidcom and Cephren, and has similar offerings to Buzzsaw.com.

and architectural firm in Southfield, Mich., agrees, saying that without signing on to use the Citadon service last year, managing the development of the \$325 million future home of the New England Patriots and New England Revolution sports teams in Massachusetts would have been exorbitantly expensive. "We're here in Michigan, and we've got to coordinate hundreds of [subcontractors] 1,000 miles away—can you imagine how much we would have spent on overnight mail?" he asks.

Other vendors cater to the AEC market too, offering targeted services to more nar-

Vendor services now range from procurement to recruitment, and project management to all-out document sharing and collaboration.

a \$300,000 extranet that Director of IS Kevin Banker says will link retail stores with back-end office software to give service representatives a legitimate sense of when customers can expect their manufactured homes. "Our new system should make everything operate more smoothly," says Banker, who adds that by switching communications online as opposed to offline as they'd been doing in the past, Clayton should save an additional \$2 million to \$3 million each year.

second floor: THIRD-PARTY VENDOR SERVICES

Banker's colleagues elsewhere in the industry also see IT as a panacea but can't afford to engineer applications of their own. Instead, like Dolph, the CIO at Gensler, these executives have turned to vendors to provide the technology they need. For a monthly fee, they can tap in to services ranging from procurement to recruitment, and project management to all-out document sharing and collaboration.

According to Ray Levitt, director of the Center for Integrated Facility Engineering at Stanford University in Palo Alto, Calif., vendors work well and are perfect for those AEC companies that decide software development is not a core competency.

San Francisco-based Buzzsaw.com, the 2-year-old company that helped Gensler, offers customers a shared space where proj-



Felix Vasquez, CIO of D.R. Horton, says his onsite pilot program, using PDAs for project managers to interface directly with suppliers, was a big success.

Such technology enables customers to manage communication among the hundreds and thousands of individuals involved on a particular project. Phil Go, CIO at Barton Malow, a construction management

rowly defined niches. TradePower, a company based in Linthicum Heights, Md., offers materials management and procurement functions to contractors in the electrical and electrical engineering fields.

PHOTO BY JENNIFER BINDER/PHOTOFETE



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Redwood City, Calif.-based BuildPoint, with a database of more than 30,000 contractors, offers similar platforms for contractors and small engineering companies in the commercial construction sector. In New York City, architect-turned-technophile Jim Lockwood, president of a company called Design Build Partners, is going after a different kind of marketplace: His product helps clients find human resources for projects that require extra hands.

For all their power in connecting people, though, the one thing these services lack is bandwidth. If a project entails particularly large CAD files, the online options are severely limited. Most CAD files range in size from 30MB to 100MB, and none of these vendors offer the bandwidth necessary to share files that are larger than that. Some companies, such as Citadon and TradePower, have developed the capacity to take snapshots of large files and display them in a much smaller, read-only format. This, however, only postpones the problem. As Stanford's Levitt explains, even if project

managers upload read-only copies of a blueprint for approval, contractors and subcontractors accustomed to working off an original that can be altered will still need to download the full file eventually.

third floor: WIRELESS

Vendors may be forced to find solutions to the bandwidth issue sooner rather than later. As PDAs and other wireless devices proliferate, and as the capacity for cellular phones to access the Internet improves, more and more contractors and subcontractors will rely on these devices to download blueprints, specifications and other data directly to the job site.

Some AEC companies have embraced wireless like a new friend. At D.R. Horton, a \$3.7 billion homebuilder based in Arlington, Texas, CIO Felix Vasquez launched a pilot program where project managers can use PDAs to interface directly with suppliers and order materials such as lumber and sheet-rock for a job. At a test site in southeast

Florida, this feature worked like a charm, enabling managers to complete a new housing development more than one week ahead of schedule—and Horton did not have to install any new technology to make it work. At Lennar Corp., a \$3.1 million residential homebuilding company in Miami, CIO John Nygard says project managers use BlackBerry pagers to facilitate e-mail communication with suppliers and accomplish similar time-saving results.

Larger companies with international operations are piping wireless technologies through satellites to bring data to job sites in Africa, the Middle East and South America. At Bechtel, CIO Leingang says these wireless satellite hookups solve the problems his field managers have experienced connecting to the network through local telecommunications facilities.

At Fluor Signature Services, a business unit of Aliso Viejo, Calif.-based Fluor Corp., Vice President and CIO J.B. King adds that on remote jobs in the United Arab Emirates and Colombia, outsourcing satellite wire-

PERMIT HERMITS

Silicon Valley developers looking for permits can now stay away from city hall

IF YOU'VE EVER BUILT an addition to your house, you know that the process of obtaining a building permit from your local government is tedious and frustrating at best. In Silicon Valley, this process has been known to be downright excruciating.

Early last year, when their permits took weeks (sometimes even months) to obtain, some people had had enough. Enter Joint Venture, a San Jose, Calif.-based nonprofit organization created to champion e-issues. With donations from local high-tech businesses and grant money from a handful of local governments, organization members set out to unify disparate building codes throughout Silicon Valley and move the application process online.

"The plan was geared as much toward the construction industry as it was toward us in government," says Lisa Bruner, a Joint Venture administrative assistant, who was on hand to launch the endeavor. "Instead of having contractors go down to city hall, stand in line, hand in their plans and wait a few weeks to get an

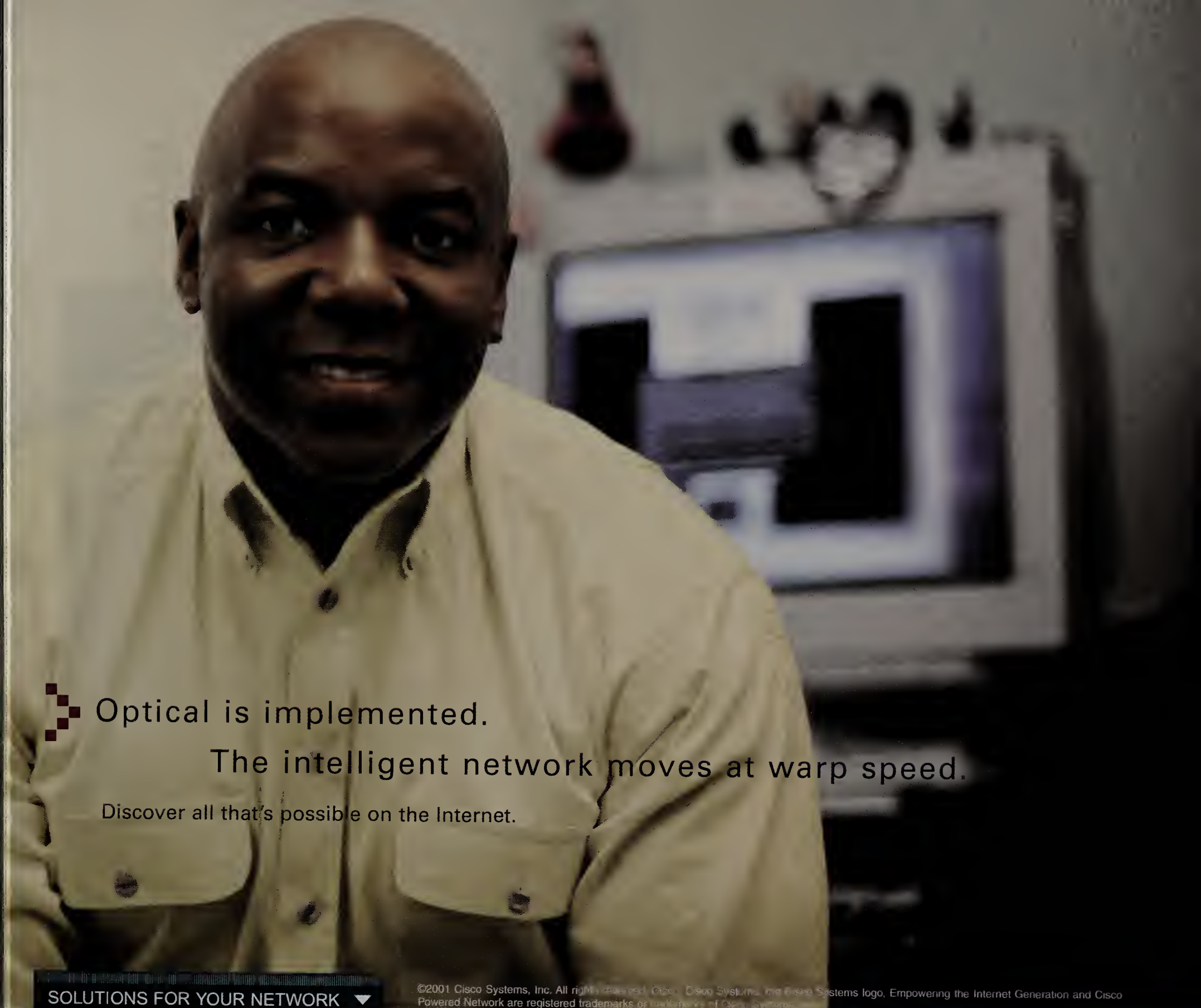
answer, we decided it would be nice if we could enable them to do it all at once."

Although the program is still technically a pilot, city officials and contractors say permits can be obtained overnight, making Joint Venture's efforts in streamlining the permit process the first successful effort of its kind.

Even the civil employees are happier. "All of a sudden, we have something that took these people 30 days to process taking two hours," says Michael Garvey, city manager for San Carlos, which is located about 25 miles south of San Francisco. "In terms of employee morale here, that's just as good as it is for residents to be able to get a complicated permit without stepping foot in city hall."

Joint Venture's plans don't stop with building permits. Already, Bruner says efforts are under way to add park permits to the sites' capabilities. Also in the works is an application that would enable city planners to approve CAD-based blueprints online.

—M. Villano



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less technologies has been the only way to enable architects and engineers to deliver data to project managers in the field. "Our people need access in the middle of the jungle of South America just like they would in downtown Houston," says King.

top floor: THE VIEW

Going forward, the AEC industry is focusing its attention on the technologies it thinks will dominate the future—virtual simulation and 4-D CAD, or CAD with the added dimension of time, as in real-time scheduling capabilities. Experts say virtual simulation of building plans could become reality by 2005 and indicate that a handful of companies are already using it today.

At the Houston-based architectural firm Archimage, architecture and computer imagery combine to create 3-D, fly-through blueprints and plans of attack for projects of every size. At Vit , a Mountain View, Calif.-based software development and consulting company founded by Levitt, managers most recently applied similar fly-through and simulation technologies to orchestrate a high profile cleanup of the Chernobyl nuclear power plant last year. "Think of this as a flight simulator for trying a number of different approaches to an architectural or engineering problem," Levitt says. "With simulations like this, you don't need to resolve yourself to one approach so soon."

worked with Disney on its new California Adventure theme park, which opened Feb. 8 (see "Mousing Around," Page 146).

Just as the collaborative environments of Citadon and Buzzsaw.com enable partici-

Vice President Phil Bernstein envisions the same Holy Grail. From his office in Manchester, N.H., Bernstein playfully touts an "intergalactic scripting device" that will someday accommodate all of the different



Barton Malow CIO Phil Go could not have managed development of a new stadium for the New England Patriots football team from Michigan without using an interactive project service.

More and more contractors will rely on PDAs to download blueprints, specifications and other data directly to the job site.

Most of the advancements in this area come from Martin Fischer, who, as associate professor of civil and environmental engineering at Stanford University, has developed a methodology for modeling schedules as well as the projects themselves. Fischer has tested this technology frequently over the past year, but most recently, he

pants to integrate documents from various sources, Fischer sees a new, XML-based industrywide platform that enables everyone from architects to contractors to integrate applications, and links every program in the entire EPC cycle.

At AutoDesk, a \$900 million software design company based in San Rafael, Calif.,

back-end platforms within the industry.

Until that day, though, the fragmented AEC industry will remain fragmented. "How do you handle it if your sheet metal contractor can't use anything but a drawing, or if the pricing system your HVAC guy uses isn't compatible with yours?" asks Bernstein. "These are cool problems, and they're ones we can't solve without IT." **CIO**

Matt Villano once spent eight hours as a carpenter on a construction project in suburban Chicago. Today he is a freelance writer based in New York City and can be reached at mjv@whalehead.com.

PHOTO BY BILL SCHWAB

CIO 100

CIO MAGAZINE'S ANNUAL SYMPOSIUM & AWARDS

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August 12-14, 2001

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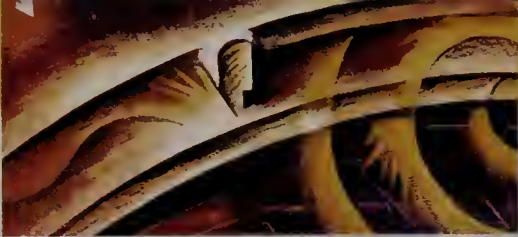
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CIO



CIO 100

CIO MAGAZINE'S ANNUAL SYMPOSIUM & AWARDS

The 2001 CIO 100 Awards will recognize companies that have demonstrated innovation in a number of areas: by creating new products and services that offer potentially significant benefits in the marketplace; by markedly refining, redefining and improving relationships with outside partners or customers; by creating and honoring internal processes to remain successful and drive the company in new directions.



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SUNDAY, AUGUST 12

8:30 AM - 1:30 PM

Riverwalk Golf Tournament

CIO hosts a tournament at the Riverwalk championship course.

3:00 PM - 5:00 PM

Registration

7:00 PM - 9:00 PM

Café 100 Welcome Reception

Meet and network with other participants, Award Honorees and Symposium Partners.

9:00 PM - 10:30 PM

Golf Awards Ceremony

Hosted by Tivoli Systems, Inc.

MONDAY, AUGUST 13

7:30 AM - 8:10 AM

Registration and Breakfast

8:15 AM - 8:30 AM

Welcome and Opening Remarks

Gary Beach
Group Publisher
CXO Media Inc.

8:30 AM - 8:45 AM

An Obligation to Innovate

Craig Conway
President & CEO
PeopleSoft, Inc.

In order to fulfill our promises to shareholders, customers and employees, we as business and industry leaders have an obligation to continue to strive for innovative ways of creating new value, new technologies, services and products, and new opportunities.

8:45 AM - 9:30 AM

The CIO's Future: Leadership in an Age of Creative Destruction

Paul Saffo
Director, Institute for the Future

Welcome to a brave new world of creative destruction, where economies of structure displace

economies of scale, and information systems become more strategic than ever. Saffo tells us how to turn the old rules upside down for success.

9:30 AM - 10:30 AM

Tri-Channel or Toast: Internet-Driven Innovation in Apparel Marketing

Michael Boyd
Director of Customer Relationship Management
Eddie Bauer

Boyd shares not-so-obvious learnings about how to use the power of the Internet to drive not just an online presence, but a fully integrated multi-channel marketing strategy that wins new customers and maximizes their value to the enterprise.

10:30 AM - 11:00 AM

Mid-Morning Break

11:10 AM - 11:55 AM

Industry Briefings

Our Corporate Partners present case studies and histories.

12:10 PM - 12:55 PM

Industry Briefings

1:15 PM - 2:30 PM

Luncheon

2:45 PM - 3:45 PM

Creativity and Technology

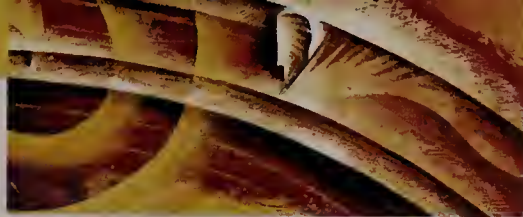
Danny Hillis
Co-founder, Applied Minds

Creativity is the driving force of technological change, and is a key ingredient to the successful application of technology. But what does this really imply about how we should manage and encourage creativity?

3:45 PM - 4:45 PM*

CIO 100 Honoree Panel Discussion

In this free-wheeling roundtable, our Award Honorees share the innovative business and technology strategies that earned them the CIO 100 Award.



Hotel del Coronado

San Diego, California

August 12-14, 2001

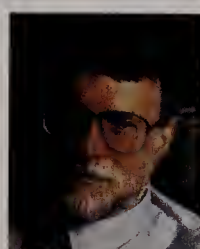
PRESENTERS



Paul Saffo
Moderator
Director and Roy Amara Fellow
Institute for the Future



Michael Boyd
Director of Customer Relationship Management
Eddie Bauer



John Seely Brown
Chief Scientist
Xerox Corporation



Craig Conway
President & CEO
PeopleSoft, Inc.



Danny Hillis
Co-founder
Applied Minds



Geoffrey Moore
Founder and Chairman
The Chasm Group



Darrell Zavitz
Global Director I/S for the S&EP Business Group
The Dow Chemical Company

To enroll, call 800 355-0246, or visit our Web Site at www.cio.com/conferences.

4:45 PM - 5:30 PM

Special Presentation on Security and Privacy

CIO, in conjunction with the US Department of Commerce's Critical Infrastructure Assurance Office, hosts a special presentation on security and privacy.

6:00 PM - 7:00 PM

Café 100 Reception

Catch up with other participants, share ideas and experiences, and enjoy the view.

TUESDAY, AUGUST 14

7:00 AM - 7:45 AM

Breakfast

7:45 AM - 8:00 AM

Day Two Welcome

Paul Saffo

8:00 AM - 9:00 AM

Innovation versus Inertia: Breaking the Back of the Innovator's Dilemma

Geoffrey Moore
Founder and Chairman
The Chasm Group

Last year, Geoff Moore shared his prescriptive agenda for tackling the "innovator's dilemma:" how can you possibly succeed in inno-

vation when the very management processes by which you maintain your current success are working powerfully against you? This year, he returns to discuss what lessons he has learned from his initial engagements with Fortune 2000 companies.

9:00 AM - 10:00 AM

Leveraging Alliances to Lead Innovation in e-Business

Darrell J. Zavitz
Global Director, I/S for the S&EP Business Group
The Dow Chemical Company

Dow continues to combine strength and sensibility with speed and agility in building its e-Business strategy. By leveraging their globally integrated IT infrastructure with new Internet-based technology, Dow is demonstrating innovation in a broad range of global projects that are creating value for customers and shareholders.

10:00 AM - 10:30 AM

Mid-Morning Break

10:40 AM - 11:25 AM

Industry Briefings

11:30 AM - 12:30 PM

CIO 100 Honoree Panel Discussion

Honorees reveal their innovation strategies.

12:35 PM - 1:55 PM

Luncheon

2:00 PM - 3:00 PM

Transforming the Corporate Landscape

John Seely Brown
Chief Scientist, Xerox Corporation

With dot.coms becoming dot.toast, the coast is now clear for starting serious new companies and evolving existing ones into enterprises that will restructure industries and — more radically — potentially restructure the entire corporate landscape.

3:15 PM - 4:30 PM

Executive Mindshare Sessions

Led by senior CIO Magazine Editors, these intimate groups exchange experiences and solutions on:

- IT Value: How to Do More with Less — and Prove It
- Integration Challenges: Technology's Just the Beginning
- IT Sourcing: The Best Options for Tough Times

- Internet Security: Do You Know Where Your Vulnerabilities Are?
- Customer Relationship Management: Bursting the Hype Bubble
- Strategic Leadership: Exerting Influence in the Enterprise
- E-Business: Is There an Exchange in Your Future?

4:30 PM - 6:00 PM

Informal Networking

Trade notes with other participants, relax and catch your breath, then get spiffed up in that tux or gown for the night's festivities.

6:00 PM - 7:00 PM

Café 100 Reception

See and be seen is the order of the evening.

7:00 PM - 9:30 PM

CIO 100 Awards Dinner and Ceremony

You are invited to attend a special black tie reception, dinner and awards ceremony to recognize this year's CIO 100 Award Honorees.

9:30 PM - 11:00 PM

Dessert Reception

Hosted by PeopleSoft, Inc., CIO 100 Awards Ceremony underwriter.

How Indian Got Its VROOM Back

The venerable motorcycle company gets a new lease on life, fueled by a high-octane ERP package

BY STEWART DECK

You hear it before you see it. A thunderous growl announces its arrival. Heads turn. People stare at the sleek, valanced fenders, the gleaming chrome and the classic Indian Motorcycle logo that 50 years ago stood for what some people call the best motorcycle ever made.

Is this a ghost? After all, the company died in 1953 from its reliance on Army contracts and a crumbling dealer network. Well, Indian is back, and the revived company and its current bikes have a new rumble wrapped in a style and a brand from the past, recovered by a \$1.3 million investment in technology systems.

Frank O'Connell, the new Indian Motorcycle Company of America's CEO, says the company has used this investment to build a dealer and consumer franchise in a way that companies with legacy components cannot. "We intend to be experts in designing and engineering and building our brand," O'Connell says. "Information technology will allow us to be flexible in terms of assembling bikes that consumers want without being strapped with huge manufacturing facilities, big plants and tooling."

The new Gilroy, Calif.-based Indian is building its business

Reader ROI

- ▶ Learn how a business is building processes around technology
- ▶ Determine how strategic alignment positions a company for success
- ▶ Hear the lessons a company has learned from others' mistakes



Frank Wagenseller,
vice president
of IT, is clearly in
the driver's seat
of the reborn
Indian Motorcycle
Company of America.



CEO Frank O'Connell is steering Indian's revival with a major investment in IT.

processes around a set of heavyweight ERP applications. In the process, it has built a computer-savvy network for dealers and encouraged them to link to the company's extranet for communications, bulletins and account references.

Indian's new chiefs have a brand panache and evocative nostalgia that has earned them devoted fans. "Indian was held in highest esteem and through the early 1950s had one of the foremost reputations for quality motorcycles," says Mark Mederski, executive director of the American Motorcycle Heritage Foundation (which operates the Motorcycle Hall of Fame Museum), based in Pickerington, Ohio. "The brand has never gone away. The motorcycle itself had a rep-

utation for quality and such character with those dark, skirted fenders, flowing lines and beautifully painted metal."

Allan Girdler, amateur historian and author of *The Harley-Davidson and Indian Wars*, unabashedly gushes that the original

Indian is building its business processes around a set of heavyweight ERP applications.

Indian Sport Scout was "a revelation, a complete knockout that some people still consider the best motorcycle ever made."

Even with all this brand affection, the 21st century Indian Motorcycle Company

of America faces many speed bumps on its road to rebirth. As it builds its current business, it has to design an entirely new line of motorcycles with a completely new engine. At the same time, it has to build interest in the bikes made today while convincing a semiskeptical motorcycle public that its big plans for the future are worth paying attention to—even if the company's current bikes aren't held in the highest regard.

ON THE ROAD AGAIN

Another of the new company's challenges is that the allure of a reincarnated Indian has burned the motorcycle world once before. Almost 37 years after the beloved original Indian company folded in 1953, a colorful entrepreneur named Philip Zanghi said he had a plan to revive the teepee-shaped plant in Springfield, Mass., and start building new Indian motorcycles. Several years later, investors realized his plans were a sham, and in 1997, he was found guilty of securities fraud, tax evasion and money laundering.

This led to a 1998 Colorado court decision that a Canadian company could have the brand as long as it actually manufactured motorcycles under the Indian name. This company teamed up with the California Motorcycle Co.—a small builder of Harley-Davidson-style clone bikes based in Gilroy, Calif.—to begin making new motorcycles in the old classic style. Indian Motorcycle Company of America was reborn.

In an unusual step for a small manufac-

turer, the company decided to buy a full-blown, \$1.3 million ERP package, Oracle 11.03, on which to run the new business. Making this investment at such an early stage forced the company to become a real busi-

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ness with real business practices, says Frank Wagenseller, Indian's vice president of IT.

"Getting those [application] modules dictated everything from how we would receive products and treat suppliers; certify, inspect and move items to the work line; open and close work orders; and receive transactions," Wagenseller says. "As most companies develop, they define their business practices and then they go out and search for a piece of software. We did it completely opposite. We said, 'Here's how the software works, so this is how we're going to do business.' Having a centralized database and centralized demand planning gives us a much better ability to react quickly to demand and make changes to forecasts and sales orders. The

tomor product. Every Indian dealer is connected to the system. More than 50 percent use it regularly to manage orders and accounts, look up product availability and check out new specs. They can also import data into their own Excel spreadsheets for further analysis.

As Indian got rolling, O'Connell liked what he saw. "The new company was built on the backbone of a fully integrated system with financial supply, dealer networks and all the elements needed to provide the right kind of information at the right time to make the right kind of decisions."

"It's not like we're bleeding edge here," says Wagenseller. "The idea is that you've got to change the culture of the organization and

challenge has been really mapping the physical processes to what's going on in the system."

Indian's full-bore ERP investment is both uncommon and innovative, says Kevin Prouty, research director of automotive strategies at AMR Research in Boston. "It's farsighted to take the approach of thinking of systems first and building the way you do business around them from the start. Not that many companies start that way, but it allows you to scale up and grow, so it makes a lot of sense."

HAIL TO THE CHIEF

In 2000 the new Indian company began to quickly turn out motorcycles with styling that echoed the classic 1948 Indian Chief model, but the guts of the new machine didn't exactly impress the motorcycle world.

"Their first Chiefs have been a necessity of invention to satisfy the court mandate. They had to turn out things quickly, and that's what they've done," says David Edwards, editor in chief of the Newport Beach, Calif.-based motorcycle bible *Cycleworld*. "It has the feel of a kit bike, which in essence it is. It's not a stem-to-stern conception as a bike should be."

The company will need to cater to the motorcycle crowd, according to Don Brown, a motorcycle industry analyst at DJB Associates in Irvine, Calif.

"Having centralized demand planning gives us a much better ability to react quickly and make changes to forecasts and sales orders."

—Frank Wagenseller, VP of IT

whole idea is to get lead times down, reduce costs and reduce our inventory carrying, and having all of these integrated processes together allows us to do that."

The company also set up a B2B extranet for its dealers based on Oracle's Web Cus-

really map out the actual business processes to what's going on in the system. That was the significant challenge here—getting the kind of people who understood how to run a business and then getting them familiar with the applications themselves. The chal-

Indian Motorcycles: 100 Years of Bumpy Roads

1901

The first Indian motorcycle—the 1901 Single—is built by bike racer George Hendee and engineer Carl Oscar Hedstrom.



1940

Indian's full line receives highly styled, skirted fenders.



1999

Indian Motorcycle Co. of America reborn in Gilroy, Calif.



1900

1913

Indian produces 31,950 motorcycles this year, an all-time record for the company.

1925

1953

Excessive reliance on Army contracts and a dissolving dealer network leads Indian to cease production.

1950

1975

1997

Ersatz entrepreneur Philip Zanghi is convicted of fraud in connection with Indian relaunch scam.

2000

Fall 2001

Indian plans to unveil its new lineup.



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Peter Fonda: The Original Easy Rider

For some, this venerable brand never went away

CIO: How did you get involved with the new Indian Motorcycle group?

Peter Fonda: I got to know Ray and Rich Sotelo and the team at the California Motorcycle Co. when they built Limited Edition 30th Anniversary [Easy Rider] Captain America cycles in 1999. Now they've given me a bike to ride and tinker with, and I get an appearance fee—I get the bike for a couple of years, and I give it back, and they auction it off for some charity.

I don't feel like I owe some allegiance to Harley—I think probably Harley owes some allegiance to me [chuckles]. I know the guys over there and like them too; they make a good motorcycle. So does Ducati. It's not like one is better than the other; they each have their own values for me.

How many motorcycles do you have?

Two Indians—one old and one new—a Harley-Davidson, a Fonda custom bike, an old BMW and a Ducati Monster. I enjoy all kinds of motorcycles, have all my life.

How's the ride on the new Indian? Do you ever go out and just let it rip?

Oh, of course! Absolutely! It's smooth riding. The center of gravity is so low that you can get a real smooth ride. And you know, with the right bars, you're just sitting back in there; it's just a real, easy, smooth ride.

With the Chiefs you have to be careful going on the corners because it has such a low center of gravity, which makes it easier to ride, but around corners, you have the footboards; you tend to drag them and that's something that most cyclists don't want to do. So you tend to make a wider corner; you don't cut it quite as sharp as you would with other motorcycles.

It's also nice when you pull up to a stop sign and some gal or guy says, "That is the most beautiful motorcycle I've ever seen!"

Do you go to Sturgis [South Dakota] for the big summer motorcycle rally?

Yeah, if I'm not working. It's a great thing. Guys and gals come up here to the [Montana] ranch and we all cruise. It's a beautiful 500-mile ride, and we love it, and people are always so friendly and nice to me there. Other bikers say, "Hey! All right! Good to see ya!" I feel like, OK, I'm all right here, nothing to worry about. I'm with a bunch of friends.

What do you ride on a 500-mile trek like that?

I'll ride my [Harley] Road King or maybe the Indian because we've now gotten to where it doesn't scrape any plates and I can putt around up there.

What other rides do you take?

Very often I'll go from here, all alone, down to Four Corners for their rally on Labor Day. And then come back up. I love it being out there alone. I don't need to have a buddy riding next to me. It's not bad when I have one, but I don't need it. I'm looking around. There are no fences. Think about it, the highway has no fences; we're just out there running. It truly is a wonderful feeling for me. (For the full transcript of the Peter Fonda interview, go to www.cio.com/printlinks.)



"Their belief is that people will beat a path to their door to buy a motorcycle that has an Indian name, but that's just a piece of a very complex puzzle," he says. "They have fancy brochures and talk a lot to the press about what they're doing, but eventually they will have to come out with legitimate products and sell them to real motorcyclists in order to be successful."

Edwards summarizes the motorcycle public's wait-and-see attitude. "If they just continue to turn out Harley clones with Indian fenders, I think they'll be seen as a pretend motorcycle company. But if they come out with a completely new engine on an improved chassis with improved bike dynamics, that's a different and much more interesting story."

FALSE START

This isn't the first time someone has tried to crack the cruiser motorcycle market by reviving a historic name. In 1993, David and Dan Hanlon, two brothers from Belle Plaine, Minn., relaunched the Excelsior-Henderson motorcycle brand that had been dead since 1931. They raised nearly \$100 million through private funding and a public stock offering, built a state-of-the-art manufacturing plant and began producing brand-new Excelsior-Henderson cruisers. Analysts said the growing market seemed to have room for more manufacturers, but in December 1999, only eight months after the first bike rolled off their assembly line, the Hanlons filed for bankruptcy. Excelsior-Henderson hasn't made a motorcycle since.

Terry Fiedler, a reporter at the Minneapolis Star Tribune who covered Excelsior-Henderson's rise and fall, says the company suffered from a mix of hubris, facility extravagance and poor planning. "They didn't bootstrap well," says Fiedler. "They built a \$50 million to \$60 million facility before they knew what demand would be for their bikes and hardly marketed themselves at all. Their motorcycles were technically sound,

—S. Deck

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Process Reengineering

but they didn't develop a solid dealership network to help them drum up demand. In the end, they sold very few bikes."

Industry watchers say Excelsior-Henderson had spent a lot of money on the manufacturing facility before it was sure the model would be a success in the marketplace. "I don't think the Hanlons did their due diligence. They believed that people would buy their machines instead of Harleys, and that simply didn't happen," says Brown. "They didn't seek the best business advice or the best design advice and insisted on their own view of what the design should be. But they were a legitimate motorcycle maker, and they took their shot at a life's dream."

Wagenseller says Indian's executives (several of whom cut their industry teeth at Harley-Davidson) followed the Excelsior-Henderson story closely to analyze why that business failed. "We heard and read a lot of descriptions of their Taj Mahal manufacturing plant, especially the [\$8 million] powder-coating facilities, and we've been very careful about where we're spending our dollars. We're spending it on technology and building brand awareness instead of on a mammoth vehicle manufacturing structure."

Wagenseller feels success also boils down to the appeal of the bike itself. "Sell-through is extremely important, so we've set up our systems to carefully track which bikes are selling in which markets and how long they're staying on the floor," he says. "Our bikes are selling. In the end the Excelsior-Henderson just wasn't that pretty, so it didn't sell. The Chief is a beautiful bike."

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The new Chief's luxuriously sweeping fenders and dazzling muscular chrome wows onlookers, which makes a great brand impression. "I can't remember when I've ridden a motorcycle that generates as much sidewalk attention as one of these new

Chiefs," says *Cycleworld's* Edwards. "People will pull you over to the side of the road to ask about it. This motorcycle makes a statement—people love the way it looks."

That visual dazzle helped sell more than 5,000 of the \$24,000 Indian motorcycles last year, and the company expects to increase those numbers by 20 percent in 2001. The real moment of truth will come this fall, when, O'Connell says, the company unveils its first designs for the completely new model. By the end of the first quarter of 2002 these new bikes should be thundering down the streets.

KICK START

One industry insider scoffs at this timetable. "At Excelsior-Henderson, it took three years and a dream team to design an engine, validate its performance and start building them," says a former

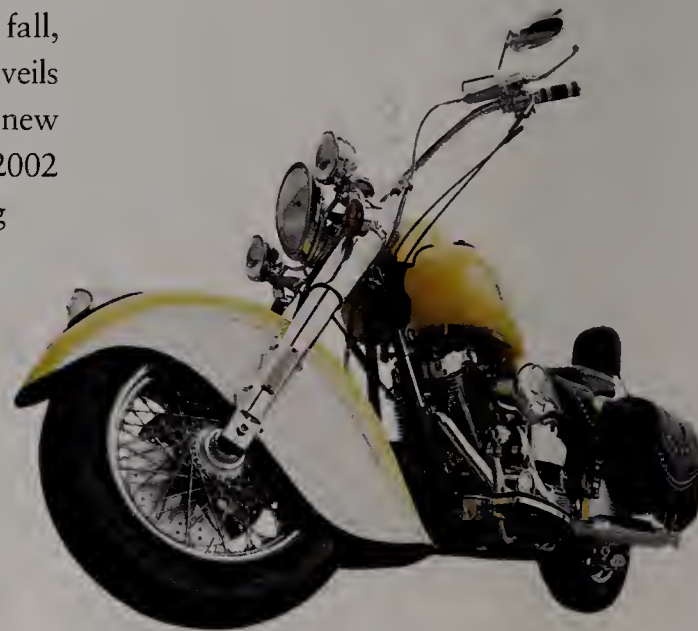
The real moment of truth will come this fall, when Indian unveils its first designs for the completely new model.

Excelsior-Henderson insider who spoke on condition of anonymity. "So you can't just design a new engine and put it in the present bike; everything has to change. Absolutely everything—and there just aren't many ways to speed up that timetable."

O'Connell (who owns and rides one of the few Minnesota Excelsior-Hendersons, as well as several Indians) scoffs right back and says Indian can cut that time in half by designing the engine and new motorcycle in-house, but outsourcing the engine's manufacture and testing. Meanwhile, Indian will continue to manufacture the frames and sheet metal components, and provide the powder coating, painting and assembly. He also points to Indian's technology strength as another key to this timetable.

Wagenseller agrees. "The power of our applications gives us a handle on our manu-

facturing processes, specifically time to production, by controlling how components are handled within the organization and fed to the final assembly area. These are all pieces of business functionality that many companies struggle to accommodate quickly, but we have under good control," he says. "We



learned how important it was to put a business process system in place that allows you to grow quickly and intelligently. We picked a good system early, got it in place quickly and put the right people in place to use it."

Cycleworld's Edwards says the proof will be in the pudding, but Indian's sales and efforts have been a pleasant surprise so far. "They turned a lot of people's ideas around with their dedication to building a cycle with what they had on hand. If they are able to come out with a new Indian, designed from the ground up to be a new Indian all of one piece...I think they could be well on their way to being a long-term player in the American motorcycle market." **CIO**

Staff Writer Stewart Deck will tell you his biker stories if you tell him how technology has given your company a new life. E-mail him at sdeck@cio.com.

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More than for Music

Digital rights management slowly makes a corporate move

BY KAREN D. SCHWARTZ

EVER SINCE NAPSTER created a stir by offering free music to anyone who had the patience to download it, the entertainment industry has been up in arms. Partially as a result of the publicity surrounding Napster, music and video

companies have latched on to countless technologies to prevent unauthorized access to digital content.

What's at stake? Billions of dollars. Forrester Research in Cambridge, Mass., predicts that

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Reason number five: ScanMail integrates seamlessly with Microsoft Exchange Virus Scan Application Programming Interface (AVAPI). There are several other reasons, but they all add up to one thing: savvy IT administrators trust ScanMail more than any other antivirus product.

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record labels alone will lose more than \$3 billion by 2005 due to online piracy. Add that to the potential dollars that could be lost by the TV, movie and video industries, and the numbers become staggering.

For entertainment companies, the financial—not to mention organizational—pain of implementing these preventive technologies is offset in spades by the promise of

protection, depending on the needs of the company. In the online scenario, valid users download heavily encrypted files with a secure password. In the offline scenario, valid users receive a unique “key” that unlocks the content, whether they downloaded it or have it stored on a CD or other media. The keys are encoded to allow users to access only the data for

Many large corporations have documents and media files that they'd like to share, but only with authorized viewers.

protection. But entertainment companies aren't the only ones with digital content worth safekeeping. Many large corporations have documents and media files—catalogs, technical support files, training videos and financial briefings—that they'd like to share, but only with authorized viewers.

“The current crop of encryption tracking tools is designed to protect copyrights for content with high value, and that certainly fits the description of much of the intellectual property in corporations,” says Mark Walter, an analyst at Seybold Publications in Media, Pa. “Corporations have a vested interest in constraining what recipients do with the documents sent to them.”

But despite claims by a bevy of anxious digital rights management (DRM) vendors that tout significant expansion plans into the Fortune 500 market, the technology is taking longer to infiltrate corporate America—outside of the entertainment industry—than some expected. That may be about to change, however. According to IDC of Framingham, Mass. (a sister company to *CIO*'s publisher, CXO Media), the content security market will grow by more than 71 percent each year to \$952 million in 2004.

DRM Unplugged

Companies can implement DRM technology in either an online or offline envi-

ronment, depending on the needs of the company. In the online scenario, valid users download heavily encrypted files with a secure password. In the offline scenario, valid users receive a unique “key” that unlocks the content, whether they downloaded it or have it stored on a CD or other media. The keys are encoded to allow users to access only the data for

which they have paid or for which they have been given rights. Tools for such content controls abound. LockStream in New York City, Microsoft's Windows Media Rights Manager, SecureStreams of San Mateo, Calif., and Seattle-based Widevine Technologies all provide tools to control viewing and distribution through websites. Other vendors, such as Bethesda, Md.-based ContentGuard (which was spun off from Xerox and is partially funded by Microsoft), have developed a suite of DRM products. In the offline world, technologies like those from InterTrust Technologies in Santa Clara, Calif., “wrap” audio in a protected layer of software that ensures that it can be played only by the buyer.

But companies hoping to implement DRM protection may never see these vendors; instead they'll turn to content delivery service providers to meet their DRM needs. Companies such as London-based Magex and Reciprocal Publishing of Buffalo, N.Y., provide protection of digital content and copyrights in concert with secure payment, distribution and financial services. Using the application service provider/business services provider model, they integrate technology from companies such as InterTrust, LockStream, Microsoft and Widevine into their products.

new products

Motivating Force

Canadian software maker

Veratium has introduced a tool designed to provide secure access to a user's desktop files from nearly any mobile device. The **Motivus Wireless Desktop** provides a view of Windows Desktop documents and folders from which users can open and view important files. The **Motivus Wireless Inbox** provides similar access to office e-mail, and allows users to open, read, forward and create new messages. Pricing begins at \$1,999 per year for 10 users. For more information, visit www.veratium.com or call 604-730-0900. A product demo and 30-day evaluation version of the software is available on the website.

Portal Power

Sybase has shipped version 2.0 of its **Enterprise Portal**, which allows customers to create personalized Web-based information portals for use by both internal users and external users, such as trading partners. The product allows for integration with back-end information systems, including B2B systems and mainframes, and it supports mobile and wireless devices. Portal services include currency conversion and language translation. Pricing is based on server processor speed and begins at \$150 per megahertz for enterprise

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Branching Out

While the bulk of today's DRM marketers focus their efforts on attracting the likes of entertainers like Britney Spears and Sony Pictures, some of these same technologies will prove useful for Fortune 500 companies outside the entertainment field.

"At its core, the technology is agnostic when it comes to the type of media it's dealing with," insists Scott Searle, founder of LockStream. Searle says his company plans to focus on corporate communications as well as the health-care, insurance and legal markets.

Other potential uses in the corporate arena include dissemination of training and other proprietary documentation. A training system, for instance, might allow only authorized users to view sensitive documents and videos in a secure manner. Product manuals could be digitally assigned to individual customers.

says David Steinberger, HarperCollins' president of corporate strategy and international.

After considering their options, company executives chose to outsource not only the content security but also the technology management and fulfillment to two companies: tech- and DRM-oriented Reciprocal and publishing-centric Lightning Source of La Vergne, Tenn. Using this model, HarperCollins creates the electronic book, adding additional features to the electronic version to make it a more compelling product than the print version. Reciprocal or Lightning Source then wraps the content file with the DRM technology of the intended e-book reader software. By wrapping the e-book in encryption technology, the content becomes associated with a set of rules defining what a consumer can and cannot do with it. For

Some of these same technologies will prove useful for Fortune 500 companies outside the entertainment field.

Proprietary pharmaceutical documentation might be securely distributed only to critical suppliers of specific drugs.

But that's all in the future: The market embracing DRM technology today is publishing—a market that shares many of the same concerns as the music and movie industry. More and more publishers are turning to DRM technology to deliver electronic books securely.

The growing popularity of e-books prompted New York City-based trade publisher HarperCollins Publishers to turn to DRM. By instituting content security technology, HarperCollins can more easily sell books in electronic format throughout the world.

"Our biggest issue was protecting copyright, because we don't want people accessing things they haven't paid for,"

example, some copies may allow copying of specific passages while others may remain totally protected.

For Employee Benefits Institute of America (EBIA), which sells 1,000-page manuals on 401(k) and COBRA plans, and other employee benefit issues, DRM technology has been a godsend. In addition to allowing customers—corporate benefits personnel and attorneys—to search and navigate the manuals more effectively, it has afforded EBIA executives significant peace of mind.

"The only way a customer can access the document now is by getting the electronic key from InterTrust," explains Tom McCormick, director of the Seattle-based organization. "If someone tries to give the PDF file to someone else, they will find that they can't open it. They will get a notice

new products

systems. Integration, mobile support and other services are priced separately. For more information, visit www.sybase.com or call 510 922-3500.

Files on the Run

If you have employees who need to access files while on the road, **Xythos Software** may have an answer. The company's **WebFile Server 3.0** allows corporations to create secure file storage areas that users can access via Web-connected devices. The package offers a variety of features, including a search tool, bandwidth control, directory quotas, security features and more. Unlike some browser-based services, Xythos products let users open and save files directly to the Xythos remote directories. It also supports drag-and-drop file management with Windows Explorer. Pricing begins at \$30,000 per CPU server plus an annual maintenance contract. For more information, visit www.xythos.com.

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saying that if they want to buy it, they have to go to the InterTrust site and pay for it.”

Initially, McCormick was concerned that although the electronic documents were secure, customers could get around the issue by printing the documents in hard copy and giving them to unauthorized users. To solve that problem, EBIA includes a watermark on each page that is visible on the printed copy but invisible on the screen. Although the watermark does not prevent people from printing, it stakes a claim on the manual's copyright.

McCormick wants to capitalize on the technology to increase revenues. This summer, the organization plans to include a sample chapter of its additional titles on each document ordered. “That way, people can click on the sample chapter, and if they like it they will be directed to go to the InterTrust site and buy it. It offers a nice marketing strategy,” he says.

Slow Start

Despite early adoption by a handful of nonentertainment companies, implementation of DRM technology in the corporate sector has gotten off to a slow start. One reason, Walter surmises, is that the technology is still fragmented and somewhat immature. “I don't think you'll see widespread adoption in the corporate market until the bugs are ironed out,” he says, including nuisance plug-ins required for many secure downloads and the lack of standardization for DRM technology in general.

But standards may be on the way. ContentGuard, Microsoft and Xerox are working to establish XrML (extensible rights markup language) as a standard for all forms of digital content. Meanwhile, IPR Systems of Milsons Point, Australia, is developing open digital rights language (ODRL), an open DRM standard that is currently being evaluated by the World Wide Web Consortium.

Despite the hurdles, the next wave of adoption has already begun. In January, Magex announced a major push into the

financial, insurance, government, health-care and law markets, while Reciprocal recently signed its first Fortune 50 client, although the company declined to name the customer. And SecureStreams struck a deal with the International Olympic Committee for the 2004 Olympics. By adding SecureStreams technology to the committee's website, it will be able to deliver video over the Internet to authorized users only, like NBC.com and Olympics.com.

And as standardization issues are worked out and more corporations seriously weigh the risks of not implementing rights management technologies, more Fortune 500 companies are bound to take the plunge. ■

Karen D. Schwartz is a freelance writer specializing in business and technology and is based in the Washington, D.C., area. She can be reached at karen.schwartz@bigfoot.com.



PREDICTIONS

B2B markets

The True Cost of E-Marketplaces

LOWER PRICES are the lure to e-marketplaces for most companies, but a recent report from Forrester Research warns that those savings don't come free.

The report, “What Does eMarketplace Buying Cost?” reveals that companies—depending on their level of involvement—could spend anywhere from \$5.4 million to \$22.9 million integrating themselves into online marketplaces between now and 2005. The costs arise from changing procurement processes, integrating internal systems with the marketplace, buying applications and paying transaction fees.

The hope is that procurement savings will ultimately offset the costs. Respondents to the Forrester study indicated that they hope to save 4 percent in 2001 and as much as 8 percent by 2003, though more than half the executives interviewed noted that they expect some hurdles—such as user resistance—that could cut into those numbers.

—Christopher Lindquist



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REVISIT
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Not Just Playing Around

Strategy simulations continue to help make better businesses

BY FRED HAPGOOD

DECADES AGO the great sociologist Daniel Bell laid down the line separating the industrial and information ages. In the industrial age, work was a game against nature; in the information age, the opponent became other humans. As more and more physical elements of production disappear into machines, those humans must concentrate on the parts of the production process that involve getting each other's attention, understanding, agreement and cooperation.

Michael Schrage (of MIT's Media Lab) recently elaborated on that theme as it applies to the world of e-commerce: "The so-called information revolution itself is actually, and more accurately, a 'relationship revolution,'" he wrote in a white paper for the Merrill Lynch Forum. "Every organization that has enjoyed success on the World Wide Web [recognizes] that the quality and quantity of interaction matters every bit as much as the quality and quantity of information."

For Schrage, information managers need to be more like relationship managers, concerned with issues such as group learning, collaboration and coordination. In his most recent book, *Serious Play: How the World's Best Companies Simulate to Innovate* (Harvard Business School Press, 1999), he argues that one of the key tools they use to these ends are computer-aided business simulations, specifically gaming simulations, in which people interact with each other in real-time.

Business-oriented strategy gaming is not particularly new. We originally covered the subject as part of an article on business simulations in general in November 1993. Surprisingly little in that article requires updating. Most of the vendor companies mentioned in the piece are still in business—a rarity when we revisit most technologies. On the other hand, interactive gaming hasn't exactly grown into a management tool of first resort.



new products

Super Server

Persistence Software has announced the latest version of its **PowerTier** application server.

Version 6.5 for J2EE offers automatic load balancing and fail over across clustered servers, providing high availability for business-critical applications. The server supports a range of operating systems, including Sun Solaris, Microsoft Windows, Hewlett-Packard HP-UX 11, IBM AIX and Linux. Pricing starts at \$25,000. For more information, visit www.persistence.com or call 800 803-8491.

Safe Commerce

RocketBridge has announced the availability of its **Jupiter** suite of e-commerce authentication and verification tools and services. The suite includes five modules: authentication, customer review, digital certificate, digital electronic signature and an electronic notary. All tools are intended to help prevent fraud and identify theft, providing extra piece of mind for both buyers and sellers. The products can work with both B2B and B2C e-commerce operations. Pricing varies by transaction volume and complexity. For more information, visit www.rocketbridge.com.

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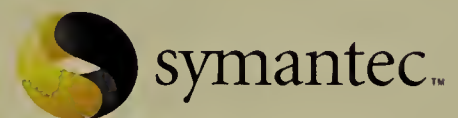
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According to Schrage, the big change in the market during the past decade has been a focus shift away from senior management using simulations to focus on strategy, to using simulations to integrate strategic concerns with operational effectiveness. Traders in the financial sector routinely recruit their colleagues to play against new investment strategies. Tiger teams (friendly

teaching others; plus they assume a host of new responsibilities, leaving themselves open (or so they might fear) to criticism from every direction. The difficulty of navigating this change has often proved an insurmountable barrier to adopting the new system.

Donnelly attacked this problem with a lean manufacturing simulation for pro-

Interactive gaming hasn't exactly grown into a management tool of first resort.

hackers) are thrown against network security features, and so on.

A more specific example is the story of the simulation developed by Donnelly Corp., a company based in Holland, Mich., which makes mirrors and windows for car manufacturers. In the mid-'90s Donnelly decided to switch to a new system called lean manufacturing.

In conventional manufacturing, both workers and equipment specialize in specific tasks, such as attaching a single part to a frame. They perform this particular act over and over, using machines built specifically for the purpose. As they finish each task, the frames either travel to the next worker by an assembly line or, far more often, just accumulate until a forklift comes along to make a "batch" transfer.

In lean manufacturing, neither workers nor equipment are specialized. Management instead divides workers into small teams, each responsible for an entire productive cycle. The productive technology is simple, distributed, flexible and very reliable. Everybody is capable of doing everyone else's job, and everybody knows everything that is going on, including enough about corporate finances to see how their work contributes to the big picture. Everyone is even expected to suggest improvements to the process periodically.

Lean manufacturing represents a revolution in workplace relationships. Workers are expected to "give away" their skills by

duction personnel: a microfacility stretched across three banquet tables and organized according to traditional principles. The players were given one abstract lecture on the principles of lean manufacturing, turned loose on the microfacility and told to find improvements.

According to Sean Dwyer, a manager of organization development and HR technology at Donnelly and one of the original designers, over a few hours the players usually find their own way to a lean manufacturing-style organization. Once they had done that on the simulation, the experience of introducing lean manufacturing to the real work floor became much simpler. Dwyer says that lean manufacturing has contributed to a 30 percent increase in productivity and a 90 percent decline in defects. (The Donnelly plan is now sold by the Scanlon Leadership Network of East Lansing, Mich.)

Gaming simulations are the business equivalent of practice sessions for sports teams or rehearsals for music, dance or drama companies. They are not necessary when people are doing the same work year in, year out. But as we move into a world in which organizational change is both common, radical and integrated with very high levels of performance—then these tools are likely to become critical. ■

What games do you play? Tell us about them at et@cio.com.

new products

Pictures with Ease

Video hardware maker **Vantum** has announced the release of a line of network-ready video cameras, the **Vantum Video Appliances**.

Designed for a variety of tasks, from teleconferencing to security, the cameras contain all the components necessary to capture, compress and stream high-quality video over existing Ethernet networks. Users can control the cameras through a Web browser interface and can program camera actions using JavaScript. Certain models also include built-in hard drives to provide local image storage. Vantum also sells appliances that can connect to existing analog video cameras. Pricing for the appliances ranges from \$1,295 to \$1,995. For more information, visit www.vantum.com or call 866 482-6886.

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A2B advocates envision a world full of networked machines and appliances. Equipped with embedded chips, software and networking capabilities, a wide range of products—from factory machinery to microwave ovens—will be able to anticipate their own maintenance needs and automatically place service requests whenever necessary, says John Canosa, chief scientist at Qestra. “For businesses this

means being able to eliminate downtime in an office or production environment.” He notes that the technology could also be used to automate the meter-based billing systems that are sometimes used on photocopiers, medical equipment and other devices.

Rochester, N.Y.-based Qestra has developed software that allows products to monitor their performance and automatically alert a technician when trouble arises. “A2B has the potential to lead to a world where there are no more copiers without paper, machines without clean fil-

ters or gas pumps without fuel,” says Canosa. Other organizations working on similar technologies include Hewlett-Packard’s Embedded Software Operation, IBM’s Pervasive Computing Group, Microsoft, Sun Microsystems and the Extend the Internet Alliance, a consortium of device networking vendors based in Salt Lake City.

Qestra is so confident that A2B will be the next big thing that the company has actually trademarked the expression A2B. There’s good reason for such optimism, says John Williams, research manager at Harbor Research, a San Francisco-based technology research company. “During the next three years, more than 50 percent of online interactions will involve Internet-enabled appliances,” he says. “There will also be a 200 percent increase in device networking investments during the next three years. As a result, asset monitoring will become more pervasive and reach down into less costly products.”

What lies ahead? Williams sees A2B quickly branching out into A2B/C (appliance to business/consumer). “Washing machines, refrigerators, vending machines, cars and many other products will be directly linked to their manufacturers,” he says. A2B/C will allow manufacturers to alert consumers to minor problems before they develop into major headaches and to automatically schedule service appointments, he adds. The technology will also be a boon for manufacturers that are looking to bind consumers into their service organizations. “With A2B or A2B/C, you won’t just be purchasing a product, you’ll be entering into a long-term partnership with a manufacturer,” Williams says.

—John Edwards

Qestra has developed software that allows products to monitor their performance and automatically alert a technician when trouble arises.



*October 14 – 17, 2001
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CIO @ perspectives

different Voices shared Visions

GETTING ALIGNMENT RIGHT

TIMES OF ECONOMIC UNCERTAINTY are also times of great opportunity. They force us to rethink our strategies and visions, to re-examine how we deploy our resources, and to jettison marginal areas of the business and focus on those contributing most to the bottom line. It's often during this rethinking process that we hit upon new ways of working together that in turn create imaginative, breakthrough models.

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October 14 – 17, 2001

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Voices. different shared visions

GETTING ALIGNMENT RIGHT

THE INTERNET and related technologies have spawned entirely new business methods and models; virtually every organization has new e-business units headed by managers with titles unknown just a few years ago. CEOs, CFOs and other CXOs have more to say about the technology decision-making process, while CIOs are expected to contribute more to the business strategy. The definitions of customer and partner have changed — and their expectations of your company have changed as well.

Today's economy is putting even greater pressures on IT and business to be in closer alignment. Companies are placing a heavier burden on IT to help launch initiatives that focus on the customer, take advantage of new opportunities, bolster the bottom line, and improve cost efficiencies in existing operations.

These efforts require solid strategies, clear prioritization, the understanding and buy-in from traditional and e-business units, and the right infrastructure and resources in place to support it all. Turf wars and finger-pointing definitely won't cut it; success will only come when different voices embrace shared visions. Executives in both business and IT camps need to create an environment, and fashion a partnership and process to make this happen.

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ROBERT COHEN, vice president & CIO, and DR. JAMES PUSEY, vice president of marketing, AstraZeneca, on the prerequisites, process and benefits of co-evolving business and IT strategies.

J. BRIAN FERGUSON, president, Chemicals Group, and ROGER K. MOWEN, vice president, Global Customer Services Group & CIO, Eastman Chemical, on developing relationships that enable the business to grow.

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JANEY PLACE, executive vice president, E-Commerce Strategy, Mellon Financial Corporation, on how you get everyone to understand, accept and begin acting in new roles when it comes to e-business.

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WORK, PLAY AND OTHER STUFF

EDITED BY SARA SHAY AND LAKE LOW

Khaki Cachet

Does it pay to pay more for plain old pants? **BY TINA SUTTON**

KHAKIS, LIKE JEANS, are a ubiquitous wardrobe staple, equally favored by preppies and fashionistas, the privileged and the underclass, men and women. In a recent issue of *LuxuryFinder* magazine, wealthy entrepreneur Tim Jefferies—best known as “the man who stole Claudia Schiffer”—says his favorite article of clothing is a pair of Ralph Lauren khaki cargo pants. This from a man who owns a BMW, skis Gstaad and favors Valentino. Did we mention he dates Claudia Schiffer?

The Gap added to khaki cachet with an ad campaign that featured Gene Kelly, Ernest Hemingway and Marilyn Monroe, all pictured in what was allegedly their favorite pair.

Khakis have an illustrious history befitting their status as the most popular item for work-to-weekend wear. The light-brown cotton fabric was named after the ancient Hindu word for “dusty,” according to Catherine Houck’s *The Fashion Encyclopedia*, and was originally used for Indian army uniforms. British troops stationed in India in the 1850s soon adopted the fabric when their military whites looked anything but in the arid windswept outpost. The British elite popularized various styles of khakis. Crisp pleated trousers were a favorite of the monarchs in their off-hours (worn with ascots and hunting jackets, of course), while jodhpurs became acceptable attire with the colonists in Africa.

It seems that everyone likes khakis. The big question these days is, Why the great disparity in prices? Are Zegna khakis at \$185 really that much better than the Gap’s \$38 pair? The



answer is it depends on what you’re looking for. If you want well-made, durable pants in a fabric that will hold up to repeated washings, then reasonably priced, sturdy styles from stores like the Gap, Banana Republic and Polo Ralph Lauren are your best bet. You’ll pay more for the Polo name—\$58 to the Gap’s \$38—but there are small design differences and the lure of the logo.

When made with three-ply fabric instead of rugged cotton, the price shoots up, and with good reason. Zegna khakis, a favorite of *The Today Show*’s Matt Lauer, were not designed for gardening or walking the dog. These are beautifully made, elegant trousers with a fine drape that gives them a much dressier appeal. Think Cary Grant versus Woody Allen—who would you rather look like?

The addition of stretch and fashion kicks up the retail price for women. Even the smallest amount of spandex helps cotton follow a woman’s curves and flatter her figure, as in the

currently popular clean-front side-zips, form-fitting capris, or those with a low rise and slim legs. These styles can be found at the Gap and in designer collections like DKNY and Calvin Klein. The clincher for women is usually the fit over the cost (around \$45 at the Gap and closer to \$100 for many designer lines).

The ultimate determining factor for anyone looking to add

the latest style khakis to his or her wardrobe this season is this: Flat-front khakis are for flat-front bodies, and that's without holding your breath.

Tina Sutton is head of Fashion Services, a Boston-based marketing company specializing in fashion and lifestyle trends. She can be reached at fashserv@aol.com.

Sight for Sore Eyes

You have to see clearly to work effectively **BY CAROLE BODGER**

ONE OF THE MOST common work-related maladies is also the most frequently overlooked—eyestrain. The effects can include burning, watery eyes; blurred vision; tension headaches and migraines, but taking a few simple measures may prevent or relieve those symptoms.

1. Use the right light. Lighting that is too dim or too bright can tire your eyes. Strive for a happy medium so that you can comfortably see your work.

2. Carefully set up your computer. Position the top of your screen at or slightly below eye level, no less than 20 inches

from your eyes and tipped toward you 10 to 20 degrees. Set the illumination at a comfortable level, avoid backlighting, and use an antiglare screen.

3. Exercise your eyes. To prevent eye fatigue, every half hour or so slowly roll your eyes in one direction, then the other.

4. Look ahead. Position whatever you're looking at directly in front of you. Use document caddies to prop up papers on the desk or beside your monitor.

5. See an eye doctor. Don't neglect getting routine eye exams. Everyone between the ages of 20 and 39 should see an ophthalmologist for a full exam at least once. Those between the ages of 40 and 64 should do so every two years.

6. Blink. Your eyelids are natural windshield washers. Every blink bathes the eyes with cleansing tears.

7. Refocus. Staring at your computer screen or any one piece of reading material for extended periods of time can bring on eyestrain symptoms. Look away and refocus your vision every 15 minutes.

8. Moisturize your eyes. Artificial tears and a variety of over-the-counter eyedrops can soothe overworked orbs. Hypoallergenic preparations are available as well.

9. Wear sunglasses all year. Winter or summer, they're the best defense against damaging ultraviolet solar rays. Choose lenses that block 99 percent to 100 percent of UV-A and UV-B radiation, block no less than 75 percent of visible light, and have gray, green or brown lenses.

10. Adjust the view. If you wear bifocals or graduated prescription lenses, look through the appropriate area of the lens for reading or distance. Ask your doctor about specialized lenses to help with the depth of focus involved in computer use. **CIO**

Carole Bodger is a health writer based in Atlanta who always wears her sunglasses. She can be reached at cbodger@ga.prestige.net.



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Opinion

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CIO Confidential

Only the Names Have Been Changed

The Upside to the Downturn

After three years of wild technology growth, it's time to tend to our underlying systems

BY ANONYMOUS

A CASUAL FRIEND of mine recently confided to me his private glee (and relief, I suppose) at the collapse of the dotcom bubble. After years of inaction and stewing about how much the other guy was making, he is now congratulating himself on his prescient decision to do nothing. Geez, I gotta get some new friends. But this guy's slimy self-satisfaction aside, there may actually be some very good reasons to welcome the current downturn, at least for a while.

I was 14 months into a major development project that started, coincidentally, the same month as the 1987 stock market collapse. What should have been a pretty straightforward effort to refit our distribution systems had long since turned into



the most difficult and aggravating project I'd had in a long time. The design and coding were taking far too long, in part because of what the design analysts were calling creeping complexity (or receding oversimplification, depending on whom you asked), and I was saddled with a senior vice president of distribution who was determined to sit on the far sidelines, lobbing the occasional stone, in case things didn't work out.

One Saturday morning, a few of my development folks and I

ILLUSTRATION BY CHRIS SHARP

Enterprise integration | Mainframe integration | Methodology framework XML | Enterprise portals | Mainframe integration | Methodology | **XML** | iPortal Application | Orbix | B2B integration | Enterprise portals | Enterprise integration | **B2Bi** | Mainframe integration | Orbix | B2B integration | Mainframe integration framework | B2Bi XML/Web services | iPortal integration | **iPortal** | Mainframe integration | Large architecture | Methodology framework | iPortal integration | Large architecture | Integration | **J2EE** | Time to market | Web services | Orbix | B2B integration | **Time to market** | Large architecture | Methodology framework | J2EE | Integration | **EJB** | XML/Web services | Large architecture | Integration | **iPortal** | Orbix | **EAI** | Integration | Mainframe integration | Methodology framework | Time to market | Application Server | Orbix | Integration | Mainframe integration | Integration | **End-to-end** | Mainframe integration | XML/Web services | B2B integration | Enterprise portals | Mainframe | **CORBA** | Enterprise integration | B2B integration | Orbix | Integration | **XML** | iPortal Application | Enterprise integration | Mainframe
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sat in a conference room and reviewed the previous week's spotty integration test results. While it seemed pretty clear that we needed to do more tuning and testing, the intense pressure I was getting from the CEO about the budget and schedule, combined with my unrivaled flair for overruling common sense with carefully crafted rationalizations, got the best of me, and I determined that we should move on to field tests as soon as possible. The meeting adjourned around midday, but the arguments continued as we drifted to our cars to salvage what was left of the weekend. Sometimes I sit behind the wheel of my parked car and think while the devil of self-scrutiny and doubt sits on my shoulder. Sometimes I just sit behind the wheel of my parked car.

The recent slowdown in the economy, the layoffs, the reduced budgets and refocused priorities could, in spite of the pain, also be just the reprieve most IT organizations need.

About 10 a.m. the following Monday, I got a call from the aforementioned SVP of distribution (not really him, of course, but his assistant), saying that he'd like to meet in his office in three hours to discuss the decision to test the new applications in his distribution centers. "Of course," I mumbled, biting through the tip of my pencil.

Should I grab my passport and leave the country? I thought, or should I find the rat that spilled the beans on the test results, kill him and then leave the country?

"I'll be there," I said.

In the year and a half since I'd joined the company and put the systems strategy together, I couldn't remember a single time when this guy ever made any attempt to be the least bit cordial or engaging. So it was a huge surprise to see him stand up and walk from behind his desk to shake my hand as I walked in. The niceties and chit-chat were beginning to drag on a little when he finally said, "Listen, our folks in the distribution centers seem to have fallen a little behind on their preparations for the field test. That, combined with the upcoming summer vacation season, means it's going to be tough to take on that testing now. I'd like for you and me to speak with the CEO together about stepping back on the project for a couple of months to help us out. I don't want to get anyone in trouble here, so it's important we show a united front. I promise to repay this favor real soon. OK? No squabbling allowed on Olympus and all that."

Barely able to keep from giggling like a 9-year-old, I gra-

ciously agreed, solemnly lamenting the disappointment my team would surely feel at the delay, and got out of his office as fast as I could.

Reprieved! Sometimes you get lucky and sometimes you hit the lottery. Only the uncertain standards of decorum in the '80s workplace (and the fact that she probably would have decked me) kept me from kissing my 68-year-old admin right on the lips.

This was one of the first real breaks I'd gotten since joining the company. My first task when I was hired to turn things around (new CIOs are never brought in when things are going great) was to develop and present a strategic vision. It was

received by most of the executives well enough, but new strategies—until they're proven with a successful system implementation or two—are defenseless cobwebs, thin strands of erasable marker forming interconnected patterns on a white board. The last thing they need is someone blowing on them, which is all this guy had been doing for more than a year. Suddenly, he was off my back and we had more time to clean

up the applications and test things right.

The recent slowdown in the economy, the layoffs, the reduced budgets and refocused priorities could, in spite of the pain, also be just the reprieve most IT organizations need. The past three years, for all the good things they brought us—namely higher visibility, larger budgets and in many cases a seat at the senior table—also brought frantic, panic-driven, often wasteful development schedules induced by absurd claims about the new economy. It also brought us shortages of just about everything—especially people—and user and market expectations beyond anyone's ability to deliver.

A critical component of the hype driving all this was to make predictions that seemed bold and counterintuitive and to dismiss doubters as old economy pikers who just didn't get it. Sometimes, these predictions were accompanied by a lot of numbers masquerading as information showing fantastic growth and given the more authoritative moniker "projections." Eventually, when enough of these self-styled new economy thinkers were all saying roughly the same thing, these visionary insights morphed into conventional wisdom. We were all reacting to very small and meaningless amounts of data, projected endlessly and seamlessly into an improbable future.

For a while anyway, the bold and patently goofy projections are over, and we can begin to think and rethink strategies and tactics for a more earthbound reality. Granted, more rational and measured growth and investment may not be as exciting, but think of the opportunities.

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To begin with, tighter budgets and more measured implementations are an invitation to reexamine investments in IT both inside and especially outside our departments. One of the nastiest byproducts of this go-go expansion, especially among more centrally controlled IT functions, has been the emergence of secret IT organizations: teams running hidden projects (ones that didn't make your priority list), funded by budget surpluses and chartered and managed by other departments or field operations to solve tactical problems. Valuable, they may be, but they are often poorly documented, built on nonstandard platforms and nearly impossible to integrate. Eventually, of course, they're handed over to you to sup-

We'll have more time to get our underlying systems healthy for when things turn around.

port. Closer, companywide scrutiny of budgets is your opening to identify and gather these projects back, make them more rational and integratable, and find a place for them in your priorities by co-opting resources.

Here also is a chance to fold e-commerce development and support into transaction systems development and support. Many companies—believing that the new economy was about to bury the old one and/or seeing e-commerce as primarily a marketing exercise—allowed design and development teams to operate outside traditional IT organizations, sometimes outside the company altogether. The result is e-commerce systems with sloppy, awkward interfaces to the systems that do the real work, inefficient spending and lots of interdepartmental friction. The new search for efficiencies should make the advantages of bringing these organizations together obvious. The result, if exploited properly, will be more capability, better systems and enhanced customer service.

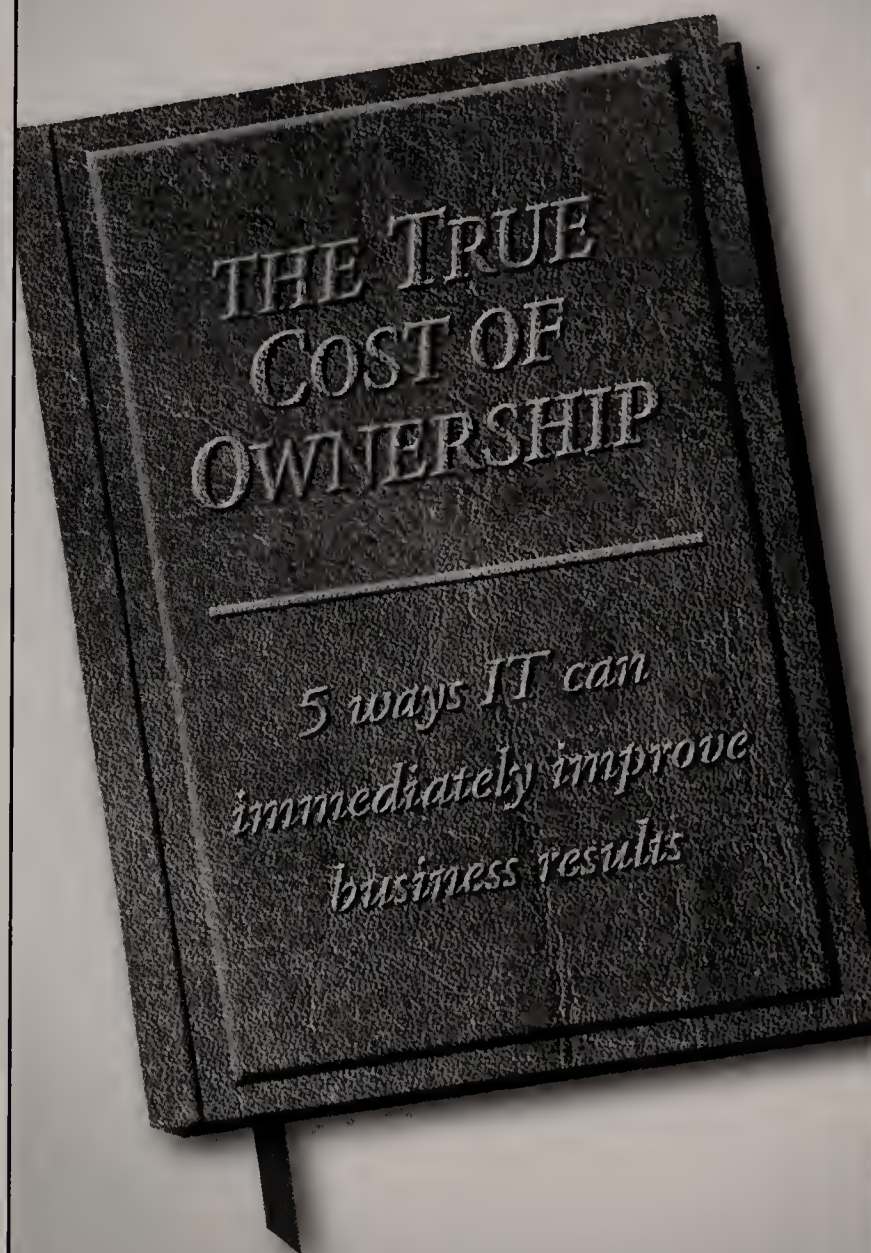
Finally, we'll have more of what are potentially two of the most precious commodities around, namely, talented people released from dotcom startups and downsized blue-chip companies and, if we're smart enough to use it properly, time to get our underlying systems healthy in preparation for when things turn around. A golden opportunity, if there ever was one.

In the end, the extra two months I got on that distribution system made all the difference. We delivered nearly flawless applications, and, the best part, that SVP of distribution twisted himself into all kinds of unnatural shapes to be nice to me from then on. That was pretty sweet.

I sure hope he doesn't read this column. **CIO**

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A Fool and His Gold

BY DAVID T. GORDON

SOMETHING HAPPENED to Gary Potter (the lost brother of Harry) when he reached the fourth grade. After school he would retreat to his closet and spend entire afternoons curled up with a mystery book.

Wedge into uncomfortable positions, Gary craned his neck and back to see the small type by the dim light. As the 8-year-old's eyesight worsened, he required thicker lenses for his eyeglasses. In time, his sedentary afternoon regimen caused him to hate exercise and become obese.

Perhaps the saddest part of Gary's story is that it didn't have to happen. His normal, healthy childhood fell victim to powerful corporate interests which, backed by phony studies and grants from the U.S. Department of Education, manipulated Gary's school principal and teachers into believing that books, pencils and notebooks belong in the elementary school classroom. Those corporate sponsors—the multinational publishing companies and stationery conglomerates—donated books and supplies, all in an effort to get kids such as Gary hooked on reading so that they could lock up lifelong customers for their wares.

These con artists knew that if kids were exposed early and



often to books, they would inevitably come to regard books as indispensable tools for learning. If only someone had stopped the introduction of books, pencils and notebooks into the classroom, perhaps Gary would have been spared such a joyless, unhealthy childhood of reading and writing.

I recently imagined this story of Gary Potter while reading "Fool's Gold: A Critical Look at Computers in Childhood," a report published last September by the Alliance for Childhood in College Park, Md. The report warns that introducing technology into classrooms at an early age poses risks to children's emotional, social, intellectual and even physical development. According to the report, too much computer use may hamper kids' creativity, blunt their interest in real-world experiences, make them antisocial and cause other health problems.

Despite scores of footnotes in the 100-page report, no real evidence is provided to substantiate this doomsday scenario.

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Facts about current brain research or early childhood development are tenuously linked to the underlying prejudice of the report: That technology is, *prima facie*, a corrupting and dangerous influence. "Fool's Gold" demands a "comprehensive report by the U.S. Surgeon General on the full extent of physical, emotional and other developmental hazards computers pose to children." This of course assumes that the Surgeon General would find only hazards, not benefits.

"Fool's Gold" does raise some important questions. It reminds us that machines can never replace capable teachers, that children need to have a variety of learning experiences, and that technology is no magic cure for struggling schools. It sounds an appropriate warning that the high-tech industry should be cautious of making claims it can't substantiate, especially about our children's future. Furthermore, it points out

It is wrong to blame new technologies as they will be a part of kids' everyday lives.

some of the dangers young children might face if they spent entire school days glued to computers. The report rightly recommends more research on the effects of new technologies on learning. These are all points with which the vast majority of educational technology enthusiasts already agree.

"Fool's Gold" treats for-profit IT companies as though they intentionally make and market dangerous products for kids. Similarly, it regards corporate-run nonprofits such as TechCorps or the CEO Forum on Education & Technology—groups that aim to help bridge the digital divide by helping to equip and wire schools—as wolves in sheep's clothing. "The press frequently quotes such organizations without mentioning their close links to companies with a financial interest in high-tech schools," says the report. That may be true. Ironically, the Alliance for Childhood benefits from the same kind of journalistic oversight. When it was released, dozens of newspapers and magazines were attracted to the gleam of "Fool's Gold." *U.S. News and World Report* splashed the story on its cover. Only *The New York Times* picked up on the fact that the Alliance for Childhood has its own ideological and perhaps even financial interest in torpedoing high-tech schools. That group is closely aligned with the Waldorf schooling method, a movement based on the writings of Austrian philosopher Rudolf Steiner. Steiner/Waldorf schools emphasize a less structured approach to learning that encourages children to develop skills at their own pace. They eschew new technologies.

"Fool's Gold" exhibits Luddite views that take an all-or-nothing approach to computers in the classroom. In doing so, it ignores the many benefits of using new technologies in

schools. Visually rich multimedia presentations can help capture the imagination of students whom otherwise might not be engaged in their studies. Distance learning connects children across the globe in collaborative projects that teach the value of cooperation.

A Better Balance

What is needed, of course, is balance and a sensible approach to learning. Which brings us back to the story of Gary Potter. He should have been encouraged to do more with his afternoons than go to his closet to read and write. He should have collected seashells, created fingerpaint masterpieces and climbed trees. He should also have tried a software program such as Kid Pix to make a creative presentation for school on, say, the life of Martin Luther King Jr. In short, he should have been encouraged to engage in a variety of learning activities.

The answer to long, arduous sessions with books is not to declare a moratorium on the use of books, but to restore a balanced use of books in conjunction with other learning and recreational tools. Likewise, if certain children spend too much time in front of a computer or watching TV, they may well exhibit many of the problems foreshadowed in "Fool's Gold." It is wrong to blame new technologies themselves, as they are technologies that will inevitably be a part of kids' everyday, 21st century lives—both as children and as adults.

As for the educational effectiveness of computers, in touting "Fool's Gold," the *U.S. News and World Report* cover blared: "Why Computers Fail as Teachers." That raises a question no reasonable person I know has asked. Of course computers are not teachers; neither are books, pencils and paper. They are tools. Absent quality instruction by competent teachers, new technologies will provide no advantage to kids' learning.

As a society, we need to accept that as new technologies change our ways of communicating we have to invest more money, time and effort to educate ourselves and our children in how to make the best use of these tools. Should we cut art programs to fund computer labs? Of course not. Should we put computers in classrooms without training teachers how to use them? Not at all. Does it have to be an either/or situation? No. We can—and should—provide Gary Potter with a whole range of exciting ways and opportunities to learn. **CIO**

Do you have an opinion you would like to express? Let Senior Editor Megan Santosus know at santosus@cio.com.

David T. Gordon is the Cambridge, Mass.-based editor of the Harvard Education Letter and the book *The Digital Classroom: How Technology Is Changing the Way We Teach and Learn*.



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A Life Lesson



Gary J. Beach

YOU DO NOT often read about electronic passive resistors in the pages of *CIO* magazine. And I intend not to break that time-honored tradition with this column.

But I do want to tell you about a man who has built his life and reputation in the electronic passive resistor business. It is an inspiring story of personal will and determination that puts our temporary economic funk in its rightful perspective.

His name is Felix Zandman. He is chairman and chief executive officer of Vishay Intertechnology, a manufacturer of passive electronic components in Malvern, Pa.

I had the opportunity to meet Zandman when he received the Electronics Industries Alliance (www.eia.org) Medal of Honor, which recognizes the contributions he has made to the electronics industry.

Though Zandman's professional list of accomplishments are impressive, his personal story of survival as a Jewish teenager in Poland during World War II—and the words of wisdom he shared in his acceptance speech—impressed me more.

If Zandman were writing this column, he would identify for CIOs “five principles as the foundation of business success: leadership, motivation, expertise, discipline and—most impor-

tant of all—‘clean hands,’ meaning integrity and honesty.”

Well said. But in a business world where we strive for measurable gains in revenues, productivity, market share and personal compensation, Zandman's closing piece of advice in his acceptance speech was the most important element in my opinion, and I want to share it with you.

Acknowledging the Catholic family that sheltered him, his uncle and several others in a 5-by-5-by-4-foot hole for 17 months during the Nazi occupation, Zandman summed up for the EIA audience the essence of business and personal life: “All that you have is what you share because it's yours even after you die.”

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REPRINT SERVICES

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For further sales information, visit
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CIO is published in the United States as well as in:

Australia, CIO Australia

P.O. Box 295, St. Leonards, NSW 2065, Australia
61-2-9439-5133; www.idg.com.au

Canada, CIO Canada (monthly)

CIO Enterprise Canada (biweekly)
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 508 872-0080.

CIO (ISSN 0894-9301) is published
 semimonthly and as a combined issue
 December 15/January 1 by CXO Media Inc.,
 492 Old Connecticut Path, P.O. Box 9208,
 Framingham, MA 01701-9208. Periodicals
 postage paid at Framingham, MA, and at
 additional mailing offices. Canada
 Publications Mail Agreement Number
 1902075. CANADIAN POSTMASTER:
 Please return undeliverable copy to P.O.
 Box 1632, Windsor, ON N9A 7C9.

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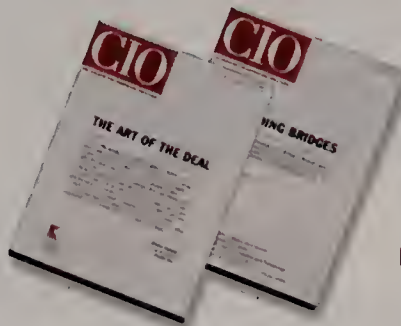
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Time Piece

Tools that Ruled

Ultimate Pen

SOMEWHERE AROUND 1883, insurance broker Lewis Edson Waterman invested in a newfangled fountain pen to use at the signing of a major deal. When the pen leaked ink all over the contract, a chagrined Waterman scurried off to find duplicate documents. In the meantime, a competing broker snagged his client.

Waterman's ire over this incident led him to invent the first leak-proof and therefore commercially viable fountain pen, which he patented in 1884. The key to his success was adding an airhole in the nib and three grooves inside the feed mechanism, which controls the ink flow.

The fountain pen solved the age-old problem of keeping ink moving from pen to page. Both the quill pen and the metal-tipped pen that replaced it required a

writer to interrupt his work constantly to dip his nib in ink. Early fountain pens contained internal reservoirs, but filling them and keeping them from leaking proved almost as challenging as frequent dipping. At the turn of the last century, Waterman and rivals George Parker and Walter Sheaffer refined the filling mechanisms as well as the nib tips.

The ballpoint pen was invented around 1895, and after Laszlo Biro perfected it in the 1930s, the comparatively complicated fountain pen fell out of common use. But

while the biro, as it became known, was practical, it just wasn't pretty. The shine of a gold nib and the elegance of a freshly inked signature were not easily forgotten. Thus, the fountain pen now enjoys the status of a fine collectible, sustaining countless websites, magazines and trade shows dedicated to its proliferation. **CIO**

Features Editor Sara Shay feels contempt for her laser printer when she uncaps her burgundy Parker pen with the 18-karat gold nib. Tell her about your favorite implements, writing or otherwise, at sshay@cio.com.



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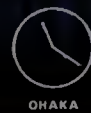
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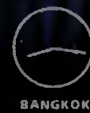
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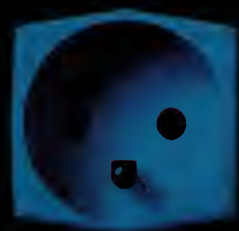
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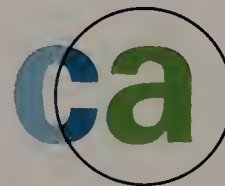
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